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UNIVERSITY OF ALBERTA

FACTORS AFFECTING ADHERENCE TO SELF-CARE BEHAVIORS FOLLOWING MYOCARDIAL INFARCTION

BY

SANDRA KAE WHITE

A THESIS

SUBMITTED TO THE FACULTY OF GRADUATE STUDIES AND RESEARCH IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

IN

COUNSELLING PSYCHOLOGY

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY

EDMONTON, ALBERTA

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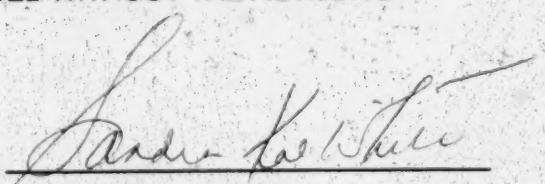

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SUBMITTED BY SANDRA KAE WHITE
IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY IN COUNSELLING PSYCHOLOGY.

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ABSTRACT

One hundred twenty six couples, in which the husband had a confirmed diagnosis of myocardial infarction, were recruited through the University of Alberta Hospitals' cardiac rehabilitation program in Edmonton, Alberta. The following factors, relative to both the patients and their spouses, were hypothesized to be related to the patient's adherence to self-care behaviors: Type A behavior, Heart Attack Locus of Control, marital adjustment, health-related communication, and perception of the degree to which the spouse does specific acts thought to be helpful in assisting the patient comply with self-care behaviors.

Patients who were most adherent to self-care behaviors, as compared with patients who were least adherent, reported statistically significant higher levels of health-related communication, marital adjustment, internality on the Heart Attack Locus of Control and perceptions that their spouses performed helpful behaviors which aided them in adhering to self-care behaviors. Spouses of patients who were most adherent, as compared with spouses of least adherent patients, reported statistically significant higher levels of health-related communication, marital adjustment, and perceptions that they performed helpful behaviors which assisted the patient in adhering to self-care behaviors. In neither the patients nor the spouses was Type A related to the patient's adherence to self-care behaviors.

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CHAPTER I

INTRODUCTION

Myocardial infarction is a major cause of death in Canada and the U.S. In 1988, 25,864 Canadians died from heart attacks (Statistics Canada, 1990). In 1987, 1,500,000 Americans sufferened heart attacks, with 513,700 deaths (American Heart Association, 1990). Clearly, efforts to prevent heart attacks or their recurrence would be of benefit to many.

Some risk factors such as heredity, male gender, and increased age cannot be changed. Other risk factors such as smoking, high blood pressure, diabetes, blood cholestrol levels, obesity, stress, and physical inactivity can be reduced or managed. If a patient who has experienced a heart attack changes his lifestyle to include self-care behaviors such as approved exercise, a low-fat diet, and the avoidance of smoking, he may reduce the likelihood of reinfarction (Heart and Stroke Fund, 1988). While medical science has developed sophisticated interventions relative to heart disease, a patient is ultimately in charge of his own health once he has been discharged from the hospital. Scientific advances in health care are of limited value to a patient who does not comply with his prescribed medical self-care regimen after he leaves the hospital (McCord, 1986).

The American Heart Association has estimated that the cost of coronary heart disease in the U.S., in 1990 will be $41.5 billion. This estimated cost reflects hospital and nursing home services, physician and nursing services, cost of medication, and lost productivity (American Heart Association, 1990). These costs reflect both the costs of the treatment for coronary heart disease and the treatment of complications arising from heart disease. An adherent patient might develop complications because of the progression of his cardiac disease which is beyond the control of himself or medical expertise. A cardiac patient who is non-adherent to self-care behaviors is considered to be at greater risk for developing complications. It is by reducing the occurrance or severity of complications due to non-adherence, that the costs of heart disease to society can be reduced.

Many factors have been investigated relative to non-adherence to medical regimens (Haynes, 1979). Research has been carried out on a variety of patient variables such as personality and family and situational characteristics. However, considering the prevalence of myocardial infarction in our population, relatively little research has been done on the adherence to self-care behaviors of patients who have experienced a heart attack.

In most studies, a limited number of variables are investigated. It is widely understood that patient adherence is a very complex issue. Many factors may influence a patient's adherence to a medical regimen. Characteristics of the patient, disease and treatment variables, and factors relative to the relationship between the patient and the health-care providers are all interrelated and may affect the patient's degree of adherence to self-care behaviors. Knowledge of the factors in cardiac rehabilitation patients which influence adherence to self-care behaviors will assist health-care personnel to identify those patients who may be at risk for non-adherence. Such knowledge will enable cardiac rehabilitation personnel to assist non-adherent patients and their spouses to increase the patient's level of adherence to self-care behaviors.

Self-care behaviors following a heart attack involve lifestyle changes and long-term adherence to these changes. The changes also affect those living with a cardiac patient. Research has noted the importance of social support provided by the cardiac patient's wife and family on the patient's general adaptation and recovery from heart disease (Doherty, Schrott, Metcalf, & Iasiello-Vailas, 1983; Mayou, 1979; Miller et al., 1989). Relatively little research has focused on the influence of the specific characteristics and behaviors of the spouse on the patient's adherence to self-care behaviors.

There are a number of behaviors commonly considered to be necessary for maintaining an optimal level of health following a heart attack. Self-care behaviors for the purpose of this study are as follows: following a recommended diet, using medications as

directed, not smoking, resting, exercising regularly, keeping medical appointments, not over-exerting oneself, controlling weight, managing stress, and asking questions regarding cardiac care (Doherty, Schrott, Metcalf & Iasiello-Vailas, 1983; Gentry, Baider, Oude-Weme, Munch, & Gary, 1983; Hilbert, 1985; Ice, 1985; Klinger, 1984; Miller, Wikoff, McMahon, Garrett, & Ringel, 1985).

Swan, Carmelli, and Rosenman (1986) have noted the need for investigation of cross spouse influence on cardiovascular epidemiology. Factors related to cross-spouse influence may also affect adherence to self-care behaviors after the patient's heart attack. Several factors will be investigated, in both the patient and his wife, relative to the cardiac patient's adherence to self-care behaviors. The factors are Type A personality, Heart Attack Locus of Control, health-related communication, marital adjustment, and the helpfulness of specific behaviors of the wife in assisting the patient adhere to self-care behaviors.

Type a behavior is a personality construct which is characterized by competitiveness, hostility, and impatience. Type A behavior has been linked to a higher incidence of heart attack (Haynes & Matthews, 1988), and there is some evidence that it is adaptive in the earlier stages of recovery but less so in later stages (Gentry, Oude-Weme, Musch, & Hall, 1981). The relationship between Type A behavior and a cardiac patient's adherence to self-care behaviors required for recovery from heart disease is unknown. There has been limited research about the interactive effects of a Type A personality of the patient and his spouse relative to the patient having a heart attack (Eaker, Haynes, & Feinleib, 1983a; Eaker, Haynes, & Feinleib, 1983b). The author is unaware of information on the interactive effects relative to the patient adhering to self-care behaviors.

A second personality factor to be investigated relative to the cardiac patient's adherence to self-care behaviors is locus of control, specifically Heart Attack Locus of Control. Literature on the locus of control construct indicates that patients who have an internal locus of control assume more responsibility for their own

health and recovery from illness and are more compliant to self-care behaviors (Wallston & Wallston, 1978). The influence of the spouse's locus of control relative to the patient's heart disease has not been investigated.

A third area to be investigated is marital adjustment. Marital adjustment has generally been shown to be directly related to a patient's adjustment and recovery from a variety of illnesses. There has been limited investigation of this factor relative to the adherence of patients who have experienced a heart attack.

A fourth area of focus for this study is to investigate whether health-related communication between the patient and his spouse is related to greater patient adherence to self-care behaviors. Health-related communication is intended to facilitate the patient's recovery and adherence to self-care behaviors following a heart attack.

In order to help a couple work together more productively on the patient's care and recovery following a heart attack, the researcher was interested in the specific behaviors of wives which could assist husbands with self-care behaviors required for their recovery from heart attacks. In addition, the degree to which the patients perceived their wives as performing the behavior, as well as the degree to which the wives perceived themselves as performing the behaviors, is investigated in order to see if there is congruence between the perceptions of the patient and his spouse on specific helpful behaviors.

Purpose of the Study

Many factors influence a patient's adherence to self-care behaviors following a heart attack. The first purpose of this study is to investigate the influence of Type A behavior and Heart Attack Locus of Control, in both male heart attack patients and their wives, relative to the patient's adherence to self-care behaviors after suffering a heart attack. A second purpose of the study is to investigate the influence of the couple's marital adjustment and health-related communication on the patient's adherence to self-

care behaviors. A third purpose of the study is to investigate whether specific behaviors of the wife, such as cooking heart-healthy meals, relate to the patient's ability to adhere to self-care behaviors after suffering a heart attack.

The study sample will be comprised of 126 cardiac rehabilitation patients who have experienced a myocardial infarction. For inclusion in the study sample, each subject must be a male patient with a confirmed diagnosis of myocardial infarction. The patient must have been discharged from hospital and in the U of A Cardiac Rehabilitation Program. He must be living with his wife, who agrees to participate in the study.

Definition of Terms

Adherence. The degree to which a patient accepts and follows all instructions related to his care. It also means an active participation in and collaboration with the medical regimen and health-care providers.

Type A behavior pattern. This personality construct is generally characterized by hostility, competitiveness, and impatience.

Heart Attack Locus of Control. This is a specific measure of locus of control relative to the patient's adherence to self-care behaviors following a heart attack.

Health-related communication. This means communication between the couple which is intended to facilitate the patient's adherence to self-care behaviors and adjustment following his heart attack.

Helpful behaviors. Helpful behaviors are specific spousal behaviors, identified by cardiac rehabilitation nurses and the literature, thought to facilitate the patient's adherence to self-care behaviors. An example is exercising with the patient.

Overview of the Chapters

The purpose of the study, the variables to be investigated, and the definition of terms as they are used in the study are outlined in Chapter I. A review of recent and relevant literature on the

variables to be investigated is presented in Chapter II. Research methodology and scale development/modification is outlined in Chapter III. Chapter IV contains the results of the data analysis and their interpretation. Conclusions, limitations of the study, and suggestions for future research are provided in Chapter V.

CHAPTER II

REVIEW OF LITERATURE

Patient adherence to a medical regimen is a complex phenomena involving not only the patient but his family, particularly the spouse. The purpose of the literature review is to provide a rationale for the variables investigated relative to a male patient's adherence to self-care behaviors following a heart attack. Research hypotheses will be formulated from the findings of this review.

Incidence of Myocardial Infarction

In 1988, 25,864 Canadians died from heart attacks (Statistics Canada, 1990). Through improved methods of prevention and intervention, the death rate from heart attacks has decreased by 26% since 1955, yet heart attacks are still the leading single cause of death in Canada (Heart and Stroke Fund, 1988). Heart attacks are considered to be the leading cause of death in the United States. In 1987, heart attacks were suffered by 1,500,000 people, with 513,700 deaths (American Heart Association, 1990).

Assuming a similar proportion of victims to survivors for Canadians, there would be approximately 78,000 survivors. Efforts to restore and maintain the health of heart attack survivors to a maximal level are most often attempted through cardiac rehabilitation programs which often requires adherence to self-care behaviors.

Adherence

The lack of patient adherence to medical regimens is a significant and chronic problem facing patients and medical personnel (Dracup, Meleis, & Baker, 1984; Gerber, 1986; Marston, 1970; Meichenbaum & Turk, 1987; Morisky, 1986). "The brilliant diagnosis, the carefully weighed treatment plan and the time and effort expended in patient education may all be wasted if the patient does not adhere to the prescriptions and proscriptions recommended by the health care provider" (Morisky, 1986, p. 5).

Many factors have been found to contribute to lower levels of adherence. Of particular relevance to cardiac patients is the finding that often the lowest levels of adherence occur when patients who have chronic disorders with no immediate discomfort require changes in lifestyle and expect prevention of further illness, instead of symptom reduction or cure (Meichenbaum & Turk, 1987). This is often the situation facing patients after a myocardial infarction.

Considerable research has been done in an effort to identify the factors thought to influence patient adherence to medically prescribed regimens. It is generally noted that the issue of patient adherence is a complex, dynamic phenomena (DiMatteo & DiNicola, 1982; Gerber, 1986; Meichenbaum & Turk, 1987). It involves problems in definition of patient adherence, assessment of adherence, the factors that influence adherence, and the interrelationships of these factors. Variables related to a patient's adherence to a medical regimen can generally be organized into four general categories: patient variables, disease/disorder variables, treatment variables, and relationship variables (Meichenbaum & Turk, 1987).

While it is recognized that many variables may influence a myocardial infarction patient's adherence to self-care behaviors, it is beyond the scope of this study to investigate more than a limited number. The following sections will discuss the recent literature related to the variables investigated in this study.

Adherence of Myocardial Infarction Patients

Cardiac rehabilitation is a process that begins while the patient is hospitalized and continues indefinitely after discharge. The primary aim of cardiac rehabilitation is to improve the functional capacity of the patient,and his psychological and physical well-being. One aspect of most cardiac rehab programs is adherence to self-care behaviors which may include taking medications as directed, keeping medical appointments, following a heart-healthy diet, maintaining an appropriate weight, taking regular and

appropriate exercise, not smoking, resting when necessary, and managing stress (Carmody, Matarazzo, & Istvan, 1987; Holm, Fink, Christman, Reitz, & Ashley, 1985; Weaver & Rodnick, 1986; Wielgosz et al., 1988). The management of risk factors has an important role in the care of patients, because it represents an area of activity in which patients can take responsibility for some aspects of management of their illness. This factor alone may outweigh all others in creating a sense of self-esteem in these patients (Teo & Kappagoda, 1984).

It cannot be assumed that patient adherence alone, will ensure positive clinical outcomes. Stegman et al., (1987) investigated the relationship between repeat myocardial infarction or death and attitudes towards, and adherence to, the medical regimen of 169 myocardial infarction patients recovering from a first myocardial infarction. They found that adherence to self-care behaviors was not associated with reduced risk for reinfarction or for a fatal heart attack. The authors suggest that the benefits of intentions to adhere and adherence behaviors are outweighed by the influence of existing cardiovascular risk factors.

While physiologic risk factors may outweigh the benefits of adherence to self-care behaviors (Cluss & Epstein, 1985; Levy, 1986; Stegman et al., 1987), it is widely accepted that the chances of restoring and maintaining health in cardiac patients is greatly improved by the patients' adherence to self-care behaviors after suffering heart disease (Cluss & Epstein, 1985; Ice, 1985; Klinger, 1984; Marston, 1970; McCord, 1986). Using a sample of 1,824 patients with coronary artery disease (CAD), Pistevos, Georgiou, and Darsinos (1989) found that in males with a quick progression of CAD from angina (the initial symptom) to myocardial infarction (the second manifestation) was more common in patients with poor adherence than in patients with good adherence. This was true for both pharmacologic and nonpharmacologic therapy.

Klinger (1984) investigated factors which inhibit and facilitate adherence to post-myocardial infarction self-care behaviors. Her interviews were with a convenience sample of 40

male and 20 female patients from three urban acute-care settings four to six weeks after discharge. In order of frequency, the factors which interfered with adherence were personal priorities, adverse weather conditions, forgetting, concurrent illness, cardiac-related symptoms, and social pressures.

There is little evidence that the severity of illness is related to cardiacs following medical recommendations (Marston, 1970). Ice (1985), reviewing research on the long-term adherence of cardiac patients relative to weight reduction and exercise therapy, reported that despite the presence of a life-threatening disease process, adherence to long-term exercise training in cardiac rehabilitation programs was low.

In a study evaluating an inpatient cardiac patient/family education program, Mills, Barnes, Rodell, and Terry (1985), using a sample of 324 patients with ischemic heart disease, 50% of which were diagnosed as myocardial infarction, found that attendance at patient education classes and the level of knowledge after the education program were the most powerful predictors of adherence. Analysis of the study's data on smoking revealed a significant reduction in the number of cigarettes smoked.

Another factor found to positively influence adherence of cardiac patients was motivation to adhere and regain health. Confidence in the judgement of health professionals and personal qualities such as determination were also reported to be important (Klinger, 1984).

A series of studies about spousal beliefs and the cardiac patient's perceptions of the expectations of others regarding his adherence to medical recommendations have been done. Using the Fishbein model of reasoned action, which proposes that a patient's beliefs serve as the information base for his attitudes, intentions, and behaviors, Miller et al. (1989), using 40 first-time myocardial infarction patients and their spouses, investigated the relationship between couple-shared responsibility and the patient's perception of the spouse's beliefs about patient adherence and actual patient adherence. They found that adherence was high for all sef-care

behaviors recommended. Both spouse and patient reports of patient adherence were highest for taking medication and lowest for following a diet. Spouses reported that patients were least compliant with stress modification behaviors. Agreement about the shared responsibility of patient and spouse for patient adherence to the medical regimen was also examined. Little agreement was found between patients and their spouses. Patient regimen adherence was found to be significantly related to the perceived beliefs of the spouse relative to the patient's adherence, for all behaviors except activity.

In an earlier study, Miller, Wikoff, McMahon, Garrett, & Ringel (1985) reported that during hospitalization, attitudes towards the self-care behavior and perceived beliefs of others of the patient's intentions to adhere were strong indicators of intentions to adhere to the medical regimen. They were not, however, indicators of actual adherence post-hospitalization. After discharge, attitudes and perceived beliefs of others, especially the spouse, were strong indicators of actual regimen adherence. In a later study, Miller, Wikoff, McMahon, Garrett, & Ringel (1988a), investigated the influence of nursing interventions including a discussion of assessment data, identification of problems and establishment of goals on regimen adherence and societal adjustments post-myocardial infarction. They found that the patient's attitudes and perceived beliefs of others about adherence (nursing staff as well as the spouse) were predictive of adherence. They concluded that these variables should be considered in any rehabilitation program and that there is a need to include significant others in the patient's rehab process.

Miller et al. (1989), investigating the relationship between attitudes and perceived beliefs of others and regimen adherence and of personal psychologic and social adjustments of patients with myocardial infarction one year after infarction, found that there were no differences at one year between experimental and control groups for regimen adherence or personal adjustments. There was a significant decrease in the average level of adherence to all self-

care behaviors from the time the patient was in the hospital to 30 days afterward, but not one year after the 30 or 60 day post-hospitalization evaluation of the patient's adherence. At one year, the perceived beliefs of others were predictive of diet, activity, and stress prescriptions. Similarly, McMahon,Miller, Wikoff, Garrett, & Ringel (1986), studying 145 myocardial infarction patients, concluded that the intentions and the adherence behaviors of the patients were closely related to their perceptions of significant others' expectations. These researchers concluded that the spouse should be included in the patient's rehabilitation program (McMahon et al., 1986; Miller et al., 1989).

Social support, particularly that provided by the spouse, has been frequently reported as a facilitating factor for adherence to a medical regimen (Mayou, 1979; Miller et. al., 1989; Dorherty, Schrott, Metcalf, & Iasiello-Vailas, 1983). Holm et al. (1985), in a study designed to describe the health beliefs of cardiac patients who completed the second phase of an outpatient exercise program and to identify factors that might influence or modify such beliefs, found a positive relationship between the social support of significant others and adherence to exercise programs. Ben-Sira and Eliezer (1990) developed a multivariate framework to predict the factors that would enhance or impede readjustment after a heart attack. They concluded that the spouse plays a crucial role in both enhancing the use of resources and assisting in the re-adjustment of the patient.

This study will investigate characteristics and perceptions of both the patients and their spouses relative to the patients' adherence to self-care behaviors following a heart attack.

Type A Personality

While certain personality attributes or characteristics of the patient may be related to the patient's degree of adherence to self-care behaviors, limited research has been conducted relating personality variables to patient adherence (DiMatteo & DiNicola, 1982; Marston, 1970). Personality characteristics that have shown

an equivocal or nonexistent relationship to adherence are dependency, depression, anxiety (trait), extroversion, self-concept and self-esteem, feelings of alienation, and somatization. Personality characteristics which have been shown to be positively related to adherence are articulateness, intelligence, responsiveness, cooperativeness, gratefulness, futuristic orientation, and stability. Patients who are non-adherent have been found to be impulsive, distressed, demanding, authoritative, overbearing, neurotic, impulsive, immature, irresponsible, unreliable, and easily frustrated (DiMatteo and DiNicola, 1982). As there is some evidence that personality characteristics of patients relate to their adherence to medical regimens, further research is needed in order to more fully understand the relationship between these factors in order to provide optimun patient care.

Type A behavior has been widely researched with respect to a person's susceptibility to heart attack. One with a Type A personality is considered to have the following characteristics:

> (1) an intense, sustained drive to achieve self-selected but often poorly defined goals; (2) a profound inclination and eagerness to compete; (3) a persistent desire for recognition and advancement; (4) a continuous involvement in multiple and diverse functions subject to time restrictions; (5) habitual propensity to accelerate the rate of execution of most physical and mental functions; (6) extraordinary mental and physical alertness; and (7) aggressive and hostile feelings (Rosenman, Swan & Carmelli, 1988, p. 9).

Several reviews and meta-analyses of the literature about Type A behavior patterns have recently been done (Dimsdale, 1988; Friedman & Booth-Kewley, 1988; Haynes & Matthews, 1988; Matthews, 1988; Matthews & Haynes, 1986). In a meta-analysis of the major prospective studies of coronary heart disease since 1978, Haynes and Matthews (1988) found that population-based studies, with one exception, showed that Type A behavior was a risk factor for coronary heart disease. The studies that identified Type A

behaviors as a risk factor for coronary heart disease (CHD) were the Western Collaborative Group Studies (Jenkins, Rosenman, &Zyzanski, 1974; Rosenman et al. 1975), the Framingham Heart Study (Haynes, Feinleib, & Kannel, 1980; Haynes & Feinleib, 1982); the French-Belgian Cooperative Heart Study (French-Belgian Collaborative Group, 1982); and the Belgian Heart Disease Prevention Trial (DeBacker, Dramaix, Kittel, & Kornitzer, 1983). Haynes and Matthews (1988) reported that studies of high-risk patients, in contrast to the population-based studies, generally fail to identify consistently Type A behavior as a risk factor for subsequent heart attacks or mortality in men at high risk for coronary heart disease. They suggest that this is likely due to risk factors other than Type A behavior.

In an update of a meta-analysis about the association of Type A behaviors and CHD done by Booth-Kewey & Friedman in 1987, Matthews concluded that

> the present analysis shows that, given the decisions regarding which studies to include and how to weigh those studies, Type A, across all measures and prospective study designs, is not a reliable predictor of CHD incidence, when weighing for number of participants in each study. More importantly, it suggests that Type A is a reliable predictor of initial CHD events in population-based studies, perhaps because it influences acute precipitating factors. Hostility is also a reliable predictor of CHD events in population-based studies (Matthews, 1988, p. 379).

Friedman and Booth-Kewley (1988) reviewed three recent meta-analyses of the Type A behavior pattern and concluded that Type A behavior has some important relationship to coronary heart disease. They also note that the Type A-CHD relationship appears quite modest in large samples. This may be because the true effect size is small, important moderating variables have been overlooked, or there have been significant measurement errors. Dimsdale (1988) reviewed the recent contradictory findings regarding Type A

behavior and heart disease but concluded that "provocative studies continue to appear, suggesting that there is still come validity to the Type A concept" (p. 111).

The Type A/B behavior pattern has been reported as directly related to the severity of heart disease (Kahn et al., 1982). The Type A behavior pattern was also reported to be a factor which differentiated myocardial infarction patients who delayed between noting initial symptoms and deciding they were ill from Type B myocardial infarction patients who delayed between deciding they were ill and seeking treatment (Matthews, Kuller, Siegal, Thompson, & Varet, 1983).

Some researchers have reported that they have found no relationship between Type A/B behavior and heart disease. Johnston, Cook, & Shaper (1987) conducted a study on 5,936 British middle-aged men in which the presence of ischaemic heart disease was determined at an initial examination and was followed up for an average of 6.2 years. In this study Type A behavior did not predict major ischaemic heart disease. In a second study, 7,426 participants in a Medical Research Council's treatment trial for mild hypertension completed a self- assessment measure for Type A behavior. No association was shown between high scores and the increased incidence of all causes of mortality, myocardial infarction, or stroke during a subsequent 5-year follow-up period (Mann & Brennan, 1987).

There is also evidence that global Type A behavior may not be a risk factor for coronary disease but that specific components of Type A behavior are significant. Hostility has been associated with increased risk, and self-absorbed Type A's may be at greater risk (Dembroski, MacDougall, Costa, & Grandits, 1989; Hecker, Chesney, Black & Frautschi, 1988). Type A's excessive physiologic response to common stressors may put them at higher risk for a cardiac event (Dimsdale, 1988).

As most research indicates that the Type A behavior pattern, or aspects of it, are a contributing factor to the occurrence of heart disease, it is of interest to determine the relationship between this

personality variable and a cardiac patient's adherence to self-care behaviors after experiencing a heart attack. Type As have been found to exhibit some personality characteristics or behavior patterns which may have implications for their recovery following an myocardial infarction. Weidner (1980) reported that Type As were more prone to experiencing helplessness when confronted with stressful uncontrollable events. "Type A's may not only passively give up attempting to assert control after exposure to contingent events, but may actively engage in behavior that prevents them from experiencing response outcome dependency and success" (p. 324). A study of 24 men with probable or acute myocardial infarction found that Type A patients tended to use denial to a greater degree than Type B patients. It was thought that this might contribute to a greater risk for reinfarction as they were unable or unlikely to understand fully the seriousness of their heart disease and therefore might not comply with the self-care behaviors required for optimal recovery and possibly a longer lifetime (Gentry et al., 1981).

There is also evidence that Type A behavior may be more adaptive at certain stages of recovery. Type As have been noted to report symptoms earlier than Type Bs (Gallacher, Yarnell, & Butland, 1988). It has been found that Type As display more self-initiative in their hospital care, resulting in an earlier discharge from hospital and greater feelings of control (Gentry et al., 1981). Type As have been found to make greater use of denial as a defense mechanism, which enabled them to deny the seriousness of their illness, and decrease the stress relative to their illness in the initial stages of their recovery (Gentry et al., 1983). In later stages of recovery, this characteristic may result in Type As being more prone to reinfarcation because they deny the seriousness of their illness and do not comply with self-care measures (Gentry et al., 1981).

The Type A behavior pattern has been found predictive of reinfarcation after an initial myocardial infarction. Using a sample of men from the Western Collaborative Group Study, a statistical analysis contrasted data from 220 men who survived their first CHD event (and lived without reinfarction throughout the entire follow-

up period) with the 67 men who experienced a second myocardial infarction. It was found that the Type A score was the strongest single predictor of recurrent CHD (Jenkins, Zyzanski, & Rosenman, 1976). In a study using post-myocardial patients who participated in the Recurrent Coronary Prevention Project, Brackett & Powell (1988) found that Type A behavior was an independent predictor of sudden cardiac death in subjects with healed myocardial infarction.

In contrast, other research has not found this relationship. Using the Structured Interview to predict the survival of participants with CAD in the Western Collaborative Study, Ragland and Brand (1988) reported that Type A patients with symptomatic myocardial infarction had better survival rates than Type B patients. Barefoot et al., (1989) reported similar results with their sample of patients with CAD. They found that in patients with the highest disease severity, Type As had better survival rates than Type Bs. The reverse was true for patients with lower disease severity scores. Several recent studies have investigated the relationship of Type A behavior to the incidence of recurrent nonfatal myocardial infarction and report that Type A behavior is unrelated to the risk of nonfatal infarction in patients with CAD (Barefoot et. al., 1989; Case, Heller, Case, & Moss, 1985; Eaker, Abbott, & Kannel, 1989).

There has been little research on the interactive effects of the patient's and his spouse's Type A personality on heart disease. A study with male cardiac patients has reported an interaction between the patient's and his spouse's Type A behavior (Eaker et al., 1983a; Eaker et al., 1983b). Analyses of spouse data indicated that when spouses were stratified by behavior type, either Type A or Type B, the highest rates of coronary heart disease were among Type A men married to Type B wives (25%). This rate was over three times the rate among Type B men married to Type B wives (7.8%).

> Significant effects were found among blue-collar men on all variables except wives' educational level. This indicates that Type A men in white-collar occupations are at higher risk of heart disease regardless of wives' characteristics, whereas the effect of behavior type

> among men in blue-collar occupations was interrelated with and modified by wives' characteristics. These results were apparent regardless of the husbands' standard coronary risk factors (Eaker et al., 1983b, p. 23).

Carmelli, Swan, and Rosenman (1985) report that Type A men whose wives had thirteen or more years of education had an increased likelihood of CAD over Type B men whose wives had a similar amount of education. These studies suggest that cardiovascular disease research must not only focus on the individual's risk factors but also on his spouse's characteristics (Blake, 1987; Eaker, Haynes & Feinleib, 1983a; Eaker et al., 1983a).

The interaction of Type A behavior and social support in relation to the severity of coronary artery disease was investigated with 113 patients undergoing diagnostic coronary angiography (Blumenthal et al., 1987). The probability of significant CAD was inversely related to the level of social support for Type As. Type As with low levels of social support had more severe CAD than Type As with high levels of social support. This relationship was not present for Types Bs. The presence of social support appears to exert a protective influence for Type A individuals but not for Type Bs.

Smith and Anderson (1986) discussed a second interactional approach to Type A behavior and cardiovascular risk. The competitive responses of Type A patients tended to elicit similar responses from both Type A and Type B spouses. Her partner's challenging behavior was likely to create physiological reactivity in the Type A wife, and cue further competitive or hostile behavior by the Type A patient. "Such a reciprocal pattern may maintain stressful interactions with negative physiological effects" (Smith and Anderson, 1986, p. 1170).

The relationship of Type A behavior to heart disease is not consistent and clear. There are ongoing problems with definition of the personality construct and the measurement or assessment of the construct. While the specific characteristics of the Type A behavior

construct are not clear and controversial, it is generally agreed that Type A behavior is a risk factor. What the implications are for those with Type A behavior relative to self-care behaviors following a heart attack is unknown. Many characteristics of the Type A behavior pattern are inconsistent with the behaviors, such as resting when necessary, minimizing stress, and recognizing physical limitations and not over-exerting oneself, required for self-care following a heart attack. Research is needed on the relationship of Type A behavior of both the patient and his spouse relative to the patient's adherence to self-care behaviors.

Heart Attack Locus of Control

A patient's beliefs about his health and his degree of control over his illness have been found to influence their adherence (Gerber, 1986; Meichenbaum & Turk, 1987). Locus of control was initially conceptualized by Rotter (1954). The Internal-External (I-E) dimension is a measure of expectancy that occurs when individuals have learned that events are or are not contingent or on their behavior. Internality and externality is a continuum, where the belief in the efficacy of one's own action is internal and the expectation that outside forces determine one's fate is external. Individuals who are internal are more likely than externals to take responsibility for their actions. Those who believe that events are related to their own behaviors are more likely than those trusting fate or powers beyond their control to initiate steps to adapt to aversive life situations. An example is the change in lifestyle that is required for recovery and adjustment after a heart attack (Strickland, 1978). Locus of control is thus a potentially useful construct in assisting health personnel predict long-term health-related behaviors of patients such as those needed in the maintenance of optimal health after a heart attack.

Some research has used locus of control scales to investigate factors related to a heart patient's recovery. With a group of 106 post-myocardial infarction patients, Derenowski (1988) found that

internality was significantly related to motivation to persevere with self-care behaviors.

In a well-controlled experiment, researchers studied 229 myocardial infarction patients and 80 medical student controls. They found that internality was directly related to better prognostic ratings and that internals left intensive care earlier than externals. A relationship approaching significance was also found between treatment congruence and internal and external beliefs. The researchers reported that when the degree of participation in a treatment program was congruent with the patient's locus of control beliefs, the patient did not die or return to hospital within 12 weeks. For example, there would be congruence when an externally oriented patient was placed in a low-participation cardiac rehabilitation program and when an internally oriented patient was placed in a high-participation cardiac rehabilitation program. They stated that this finding is worth noting in terms of planning rehabilitation programs based on the personal characteristics of patients (Cromwell, Butterfield, Brayfield, & Curry, 1977). Strickland (1978), in a review of studies on locus of control and cardiovascular functioning, also noted that the most successful treatment of health-related problems such as smoking cessation, weight loss, and rehabilitation after cardiovascular arrest occurred when the patients' I-E beliefs were congruent with treatment methods.

The locus of control scales have been used with other patient populations to investigate adherence to common self-care behaviors often required of cardiac rehabilitation patients. Internality has been significantly related to information-seeking in renal dialysis patients (Lefcourt, 1981) and successfully quitting smoking (DiMatteo & DiNicola, 1982; Kaplan & Cowles, 1978; Lefcourt, 1981; Wallston & Wallston, 1978). Research relative to weight loss and locus of control has produced contradictory and inconclusive findings (DiMatteo & DiNicola, 1982; Lefcourt, 1981; Strickland, 1978; Wallston & Wallston, 1978). A study investigating the interaction of internal and external beliefs and a weight

management program, found that Health Locus of Control (HLC) internals expressed greater satisfaction with a self-directed program. Health Locus of Control externals were happier with a therapist-directed program. Health Locus of Control was not related to weight loss in either program, only satisfaction with the format of the program (Wallston and Wallston, 1981). Kaplan and Cowles (1978) attempted to predict weight loss maintenance in a group of women who had participated in an 8-week behaviorally based weight management program. They found no relationship between Health Locus of Control or Weight Locus of Control measures and loss of weight, the dependent variable. Saltzer (1979) studied 115 women who began a voluntary clinic-based medical weight reduction program. Scores on the Multidimensional Health Locus of Control did not distinguish between completers and noncompleters, but the completers were more internal than noncompleters on The Weight Locus of Control Scale.

Rotter (1975) noted that specific measures of internal-external expectancy would be predictive of behavior in a specific situation (Lewis, Morisky, & Flynn, 1978). Wallston, Wallston, Kaplan, and Maides (1976) developed a scale to improve understanding of the relationship between health-related behaviors and expectations, the Health Locus of Control. Later, the Multidimensional Health Locus of Control scale was constructed, allowing for data analysis for the dimensions of Internality, Powerful Others, and Chance (Wallston, Wallston, & DeVellis, 1978).

More specific locus of control measures of health beliefs have been developed recently, such as The Mental Health Locus of Control (Hill and Bale, 1981), The Alcoholic Responsibility Scale (Worell & Tumilty, 1981), the Weight-Specific Locus of Control Scale (Saltzer, 1979), the Dental Locus of Control (Harris et. al., 1987) and the Heart Disease Locus of Control (O'Connell & Price 1985). The Heart Disease Locus of Control Scale measures locus of control relative to preventing heart disease. A modified version of this scale could be used to measure a patient's locus of control after experiencing a heart attack.

In summary, research generally indicates that an internal locus of control is predictive of a patient's assuming responsibility for several behaviors required for self-care following an illness. Having patients participate in cardiac rehabilitation programs and monitoring their self-care behaviors in ways that are congruent with their health beliefs have been found to facilitate adherence to self-care behaviors following a heart attack. Further investigation is needed on the relationship between locus of control in cardiac patients and their adherence to self-care behaviors.

Marital Adjustment

Several authors have noted the lack of research specifically in the area of adherence to cardiac medical regimens and marital adjustment (Hilgenberg & Crowley, 1987; Klien & Warren, 1983; Radley and Green, 1986). "For an individual with chronic illness and his spouse, the marital situation is of particular importance, for it is within the social context of the family that an illness occurs and is managed" (Stanley & Frantz, 1988, p. 677). A crisis such as a husband's myocardial infarction has the potential for causing dysfunction in the marital relationship because the occurrence results in changes in family roles (Bedsworth & Molen, 1982; Dracup, Meleis, Baker, & Edlefsen, 1984; Fournet & Schaubhut, 1986), in family communication patterns (Ben-Sira & Eliezer, 1990; Waltz, 1986), and in the lifestyle of the family (Dracup et al., 1984; Hilgenberg & Crowley, 1987; Kline & Warren, 1983; Skeleton & Dominion, 1973).

In contrast to the above fingings, Meddin and Brelje (1983), in a study with a sample of five couples, reported that two of the five couples found that their marital relationship was strengthened as a result of the husband's myocardial infarction and subsequent recovery. This was attributed to a pre-existent strong marital relationship and good support from others during the initial stage of recovery from the myocardial infarction.

Dhooper (1983) studied 40 families of patients,who had suffered a first heart attack, during their hospitalization and after

discharge. The crisis of the heart attack was a turning point; almost half the families reported that they felt stronger. Only one-fifth reported that they felt worse off in overall functioning. Mayou (1984) reported that a couple's pre-illness level of marital functioning best predicted post-myocardial adjustment.

Waltz (1986) conducted a longitudinal study on illness and marital situation as predictors of long-term well-being and ill-being. He used a national sample of male cardiac patients between the ages of 30 and 65 who had survived a first myocardial infarction. The patients' spouses were included in the investigation. Waltz concluded that an emotionally close marriage is a major resource required for coping effectively with illness and long-term adjustment. An emotionally close marriage provides the patient with an emotionally secure environment in which he can slowly restructure his self-image and world view. Furthermore, while patients with a satisfactory marital relationship feel that their wives are sincerely concerned about them, individuals lacking a secure marital relationship are more likely to resort to denial instead of adapting to changed life circumstances such as severe chronic impairment, forced retirement, and curtailment of previous activities and goals when their self-concept is threatened. Emotional isolation and long-standing marital difficulties would make changes required for adjustment more difficult (Riegel, 1989; Waltz, 1986). A similar view was expressed by Radley and Green (1986) in a study with angiograph patients.

Kline and Warren (1983) conducted a study involving 50 couples in which the husband had been hospitalized with a myocardial infarction within the previous year. Their study investigated the relationship between and among three variables: (a) husband-wife agreement about the husband's adherence to the health regimen, (b) the husband-wife agreement about responsibility for assuring adherence to the health regimen, and (c) the husband-wife perceptions of the level of function (mutuality) in the marital couple. The variables which significantly predicted the wife's mutuality scores were (a) agreement about adherence, (b) agreement

about responsibility for activity and stress reduction, and (c) the wife's perception of her husband's activity level. The husband's mutuality score was significantly predicted only by the husband's perception about the severity of his illness. The couple's mutuality scores were significantly predicted by the following variables: (a) agreement about adherence, (b) agreement about responsibility for activity and stress reduction, and (c) husband's activity level. This study did not reflect whether marital mutuality enhanced overall adherence to self-care behaviors, but it did indicate that agreement over issues related to the patient's adherence affected the perception of marital mutuality for both patients and their spouses. Miller and Wikoff (1989), in a study investigating the psychosocial problems and adjustments of 40 myocardial infarction patients and their spouses, found no agreement between patients and spouses on shared responsibility for regimen adherence. More research is needed to investigate the relationship between the marital adjustment of myocardial infarction patients and their wives and the patient's adherence to self-care behaviors.

Health-related Communication

> Little attention has been given to prior functioning or the process aspects of family relationships that may account for differences in family adaptation to chronic illness. A central factor in healthy marital and family functioning is the capacity to have open, honest and clear communication when dealing with stressful issues. (Stuifbergen, 1987, p. 49)

Adjusting to the forced changes that occur in a family when a husband suffers a heart attack is often very difficult. The process is made more difficult when the patient and his wife have difficulty in communicating constructively about their feelings, concerns, the patient's care, and the lifestyle changes that are occurring as a result of the heart attack (Radley & Green, 1986).

A limited amount of research has been conducted on family communication between cardiac patients and their spouses. In a

study of 63 married Israeli males, each having had one heart attack, Ben-Sira and Eliezer (1990, p. 523), concluded that it is

> open communication patterns that facilitate catharsis, clarification, enhancement of a feeling of belongingness, mutual support, and consequently reaching an optimal level of adjustment. It is not the reallocation of the roles per se, but rather the possibility of mutual communication, providing information and ventilation of strains that conditions a heart patients readjustment.

In a longitudinal study with 600 male cardiac patients and their spouses which investigated adaptation to a first myocardial infarction, patients in a high intimacy group reported after one year that they could speak openly and without reserve about their health-related fears and concerns (Waltz, 1986).

In a study of the psychological and social effects of myocardial infarction on 82 wives of patients who had suffered a first myocardial infarction, Fournet and Schaubhut (1986) found that while the wives experienced stress comparable to that of the patients, they also had a significant degree of influence in their husbands' rehabilitation by discussing the illness and making plans to enable the patients to more adequately follow self-care behaviors required for their recovery. A holistic approach to the rehabilitation of the cardiac patient by providing support to the spouse as well as the patient was advocated. The authors noted that out of concern for the consequences that might result from expressing thoughts and feelings to the patient, healthy discussion between the couple may be avoided. They stated that, "Couples must learn to discuss their fears and concerns with one another" (Fournet & Schaubhut, 1986, p. 17). In an article on the effects of chronic illness on the family, Bruhn (1977, p. 1062) stated that "a crucial way for families to cope with cardiac illness is to work together and communicate freely, especially during the times of convalescence."

In a study of 25 patients and their families investigating changes in family patterns after a myocardial infarction, the patients reported keeping things from their spouses so as not to

worry them. Some wives stated that they tried to keep upsetting news from their husbands when they first came home from the hospital. One-third of the patients felt there had been no change in communication and decision making within the family. Positive changes noted by the patients were that they were speaking up more and that the family was stronger. Many spouses felt that their family had achieved greater closeness as a result of the husband's heart attack (Dhooper, 1983).

The patient's ability to communicate his feelings, wants, and needs has also been noted to greatly influence his spouse's ability to empathize and participate constructively in his rehabilitation (Bramwell, 1986). Bramwell found that 22% of the 89 wives of myocardial infarction patients indicated that they had difficulty being empathetic with their husbands' experiences because the patients tended to keep their feelings and worries to themselves. Five percent of these women also reported that they found it difficult to be supportive because the patient did not share his concerns. Generally, wives who reported having open discussions with their husbands and who saw themselves as being part of the rehabilitation team had the least difficulty empathizing with their husbands. Eighty-three percent of these wives indicated that common strategies they used to be empathetic were being companionable, being available to listen, or working together by talking things out and planning ahead (Bramwell, 1986).

Several cardiac rehabilitation programs have investigated the effects of efforts at enhancing communication between cardiac patients and their spouses. A cardiac rehabilitation program using patient-spouse support groups and based on interactionist role theory included information on facilitating communication between spouses. After three years of using the program, the authors concluded that the program facilitated direct and consistent communication between spouses which was critical to the re-establishment of family equilibrium and the ultimate recovery of the cardiac patient (Dracup & Meleis, 1982; Dracup et al., 1984).

Another study by Diamond and Waggoner (1986) investigated a psychotherapy program for cardiac patients and their families which was initiated to minimize the emotional consequences of heart disease. While the goals of therapy in this program were to center on feelings of loss and the emotional conflict related to the losses, recurring themes involved open discussion of fears in order to put anxieties in a more realistic perspective, a need for better communication with the physician, a need for better communication between the patient and family members regarding the family's emotional expression and assertion of feelings towards the patient, and appropriate expressions of anger. Findings supported the hypothesis that short-term psychotherapy increased emotional adjustment. However, there was an insignificant change in an item measuring adherence to the physician's instructions. This finding was attributed to the high degree of adherence prior to therapy. There was also an insignificant change in scores relative to marital relationships, possibly due to pre-existent and long-standing problems which were less responsive to short-term psychotherapy. Further investigation of the relationship of health-related communication between cardiac patients and their spouses and the patients' adherence to self-care behaviors following a heart attack is needed.

Spouses' Helpful Behaviors

"Social support may be viewed as the extent to which basic social needs are met through interaction and communication with others" (Derenowski, 1988, p.143). A review of studies investigating the relationship of patient adherence with variables such as the influence of family members and interpersonal relationships found that 33 studies found a positive relationship between social support and adherence, 18 studies showed no relationship and one study found a negative relationship between social support and adherence (Doherty et al., 1983). Hilbert (1985) investigated why some patients recovering from a life-threatening illness cooperate with their rehabilitation and others do not. She

found that the facilitating factor reported most frequently was social support, particularly by the spouse. In contrast, a later study which investigated the relationship between spouse support and M.I. patient adherence found no significant relationship between spouse support and patient adherence (Hilbert,1985).

The importance of the spouse's support and assistance in the patient's recovery has been frequently noted (Mayou, Foster, & Williamson, 1978b; Miller et al., 1988; Miller & Wickoff, 1989; Nyamathi, 1987; Reid, Graham & Mulcahy, 1984). Ice (1985) reported that lack of spousal support was a common reason for patients dropping out of exercise rehabilitation programs. Patients whose spouses supported their exercise routines were twice as likely to adhere than were those whose spouses were either neutral or negative towards their exercise programs. A study involving 150 middle-aged men, 40 to 65 years, participating in the Coronary Primary Prevention Trial at the University of Iowa's Lipid Research Clinic, reported that patients in the high spousal support group had a significantly higher degree of adherence than those in the low spousal support group (Doherty et al.,1983).

Chatham (1978) noted the need for concerned wives of cardiac patients to know specifically what they can do to assist in their spouses recovery. Several studies have investigated or noted specific supportive behaviors of spouses that assist the myocardial infarction patient in his recovery or adherence to self-care behaviors. A study on adherence and the post-myocardial infarction patient, with a sample of 40 male and 20 female cardiac patients and their spouses, revealed that spouse support included doing the shopping, preparing heart-healthy meals, reminding the patient about medications, sharing exercise, keeping the home quiet, and providing emotional support (Klinger, 1984). Research with 150 patients and their wives in the Coronary Primary Prevention Trial at the University of Iowa Lipid Research Clinic investigated specific behaviors of the patients' wives associated with medication adherence: showing an interest in the program and reminding the patient about his medication. A behavior negatively associated with

adherence was nagging the patient about his medications or his diet (Doherty et al., 1983). Reid, Graham and Mulcahy (1984) noted the importance of family support to dietary adherence for heart patients.

Bramwell (1986) conducted a study investigating the experiences of 82 wives of myocardial infarction patients in the support role after their husband's first myocardial infarction. Eighty-two percent of the wives reported little or no difficulty with dietary management, 24% encouraged exercise by going for walks with their husbands, and 24% had to actively encourage their husbands to rest. Similarly, in a study on the psychological and social effects of myocardial infarction with 82 wives, Mayou, Foster, and Williamson (1978a) concluded that the patient's wife can facilitate his efforts to exercise, diet, and quit smoking by doing these things with him. In a study on the course and determinants of reactions to myocardial infarction, Mayou (1979) noted that the couples' discussions relative to plans and symptoms varied considerably. The extent was related to the degree of practical involvement of spouses in convalescence such as sharing walks, dieting together, and giving up smoking.

In summary social support, particularily that given by the patient's wife, appears to affect the patient's adherence to prescribed regimens and to his recovery from illness. In addition, the patient's perception of his wife's support has been shown to influence desirable behavioral changes in cardiovascular risk reduction (Derenowski, 1988). Research is needed on the specific spousal behaviors and the patient's perception of his wife's support and the relationship these may have on the cardiac patient's adherence to self-care behaviors following a heart attack.

Patient adherence to self-care behaviors is necessary in order to maintain an optimal level of health after a heart attack. Many factors, related to the patient and his spouse may influence the patient's adherence. The purpose of this study is to investigate the relationship of the following factors in the patients and their spouses relative to the patient's adherence to self-care behaviors:

Type A behavior, heart attack locus of control, marital adjustment, health-related communication, and the spouses' helpful behaviors. Based on the previous review of the literature, the following hypotheses are put forth:

1) Patients with higher Type A behavior scores will report lower levels of adherence to self-care behaviors.
2) Patients with an internal locus of control relative to their heart attack will report higher levels of adherence to self-care behaviors.
3) Patients with higher levels of marital adjustment will report higher levels of adherence to self-care behaviors.
4) Patients with higher health-related communication scores will report higher levels of adherence to self-care behaviors.
5) Patients who perceive higher levels of helpful spousal behaviors will report higher levels of adherence to self-care behaviors.

There has been limited investigation of the influence of a spouse's characteristics and behaviors on the cardiac patient's adherence to self-care behaviors following a heart attack. Research is needed to investigate the influence of the wife's Type A behavior, Heart Attack Locus of Control, marital adjustment, health-related communication, and supportive behaviors relative to the patient's adherence. The following hypotheses are put forth.

6) Wives with higher Type A behavior scores will have husbands who report lower levels of adherence to self-care behaviors.
7) Wives with an internal locus of control relative to their husband's heart attack will have husbands who report higher levels of adherence to self-care behaviors.
8) Wives with higher levels of marital adjustment will have husbands who report higher levels of adherence to self-care behaviors.

9) Wives with higher health-related, communication scores will have husbands who report higher levels of adherence to self-care behaviors.

10) Wives who perceive that they have higher levels of supportive behaviors will have husbands who report higher levels of adherence to self-care behaviors.

Research on the specific supportive behaviors of the patients' wives which enable the patient to be more compliant and the congruence between the patients' and the spouses' view of their helpfulness is also needed. In order to acquire a better understanding of these issues, the following research questions are asked:

11) What specific helpful behaviors of the wife are most highly related to the patient's higher levels of adherence?

12) Is there congruence between the degree to which the patient views his wife as performing these helpful behaviors and the degree to which the wife perceives herself doing them?

As adherence is a complex phenomena, the interactive effects of these variables relative to the patients and their wives will also be investigated in order to identify which factors or combination of factors best predict a patient's adherence to self-care behaviors following a heart attack.

CHAPTER III
METHODOLOGY

This chapter discusses the methodology used in this research study. The method of obtaining the study sample and the criteria used for the subjects' inclusion in the study sample are discussed. The measuring instruments used in the study as well as modifications made to each are described. The procedures followed in obtaining the research data are outlined. Finally, the statistics used to analyze the data are discussed.

The purpose of the study was to investigate the ways in which a number of variables relate and interrelate to a male patient's adherence to commonly required self-care behaviors following a heart attack. Because change following a heart attack affects those the patient lives with, it is important to assess the influence that the wife's personality, behaviors, and beliefs may have on her husband's adherence to self-care behaviors.

The dependent variable in this study was a scale which reflected the patient's adherence to a number of specific self-care behaviors commonly required to maintain optimal health following a heart attack. The independent variables investigated were measures of both the patient's and their wive's Type A behavior, Heart Attack Locus of Control, marital satisfaction, health-related communication, and wives' helpful behaviors in assisting patients to be adherent to self-care behaviors.

Subjects

One hundred and twenty-six male patients attending the Cardiac Rehabilitation Clinic at the University of Alberta Hospitals, Edmonton, Alberta and who met the following criteria, volunteered to participate in the study.

1) They were male
2) They had a confirmed diagnosis of a myocardial infarction
3) They were living with a wife or common-law spouse, and
4) They were discharged from hospital.

A further condition for each patient's participation in the study was that his wife volunteer to participate by completing and returning a similar questionnaire.

Measuring Instruments

Separate questionnaires were developed for the patients and their wives. Both questionnaires were similar and included the following instruments with minor modifications (see Appendix A).

Missing data and items that were "Not Applicable" to a patient/spouse were assigned the mean value of the respondent's total scale items. Some scale items were assigned reversed values if a "Strongly Disagree" response of 1 to 3 on the Likert scale was a more adaptive response. For example, on the Adherence Scale item *I over-exert myself*, if a patient responded 1 (Strongly Disagree), that item would have the response value reversed and assigned a value of 6, as the response would be indicative of self-care.

Adherence Scale. The Adherence Scale, the dependent measure in this study, is an index of self-care behaviors intended to assess the patient's behavior relative to aspects of self-care commonly expected after suffering a heart attack.

The original version of the eleven-item index was developed for a prior study (Calder, Beach, & White, 1988). It was checked for face validity by two cardiac rehab nurses as being common and required self-care behaviors for those experiencing heart disease. A volunteer sample of 25 patients with various types of heart disease were recruited from the University of Alberta Cardiac Rehab Program when they appeared for post-discharge stress tests, from the Cardiac Rehab exercise groups, and through the U of A Hospital psychologist. As with the present study, a condition of participation was that their wives also complete a similar questionnaire. The patients ranged in age from 43 to 69 years of age (X=56.7; S.D.=7.9). The educational level of the sample ranged from 5 to 21 years (X=13.6; S.D.=3.8). Forty percent reported having undergone surgery, 72% reported having had a heart attack, and 24% reported having angioplasty. Since the total is greater than 100%, some respondents

had more that one procedure or type of heart disease. A Cronbach Alpha estimated the internal on the patients' index to be .47.

The revised Adherence Scale (Table 1) used in the present study was also checked for face validity by two cardiac rehabilitation nurses as being common expected and required self-care behaviors after having a heart attack. In an effort to validate the patient's self-report on his adherence to self-care behaviors, the patient and his spouse completed similar versions of the scale. The patient was asked to respond on a 6-point Likert scale of Strongly Agree to Strongly Disagree to a statement (e.g. *I follow my recommended diet)* His wife was asked to respond to the statement (e.g. *He follows his recommended diet*) on the same 6-point scale. Adherence scores of the patient and his spouse were averaged so that the patient's adherence score was the average of the 11 items on both scales. Items on the scale that were omitted or not applicable were assigned the average value of items answered by the patient or his spouse so that the total adherence score would not be inordinately low if a self-care behavior did not apply or if a response was omitted.

The internal reliability of the patients and the spouses Adherence Scale scores in this study, estimated by a Cronbach Alpha, were .59 and .67 respectively. The Cronbach Alpha estimate of internal reliability of the combined patient and spouse scores used in the data analysis was .75.

Minor changes were made on the original index for the present study. Four items were used as they appeared in the pilot study. On six items, minor editorial changes were made. The *I smoke* item on the pilot study with a 6 point Likert scale response format was changed to *I am a non-smoker* with a circle Yes or No response. This statement was followed by a question asking for the number of cigarettes smoked.

The Type A Self-Report Inventory. The Type A Self-Report Inventory (TASRI) (Blumenthal et al., 1985) was developed in order to have a measure of Type A behavior which was brief and easy to administer and score. The TASRI is significantly related to more

TABLE 1

Patient's Adherence Scale

	Strongly Disagree					Strongly Agree	
I use my medications as directed.	1	2	3	4	5	6	N/A
I rest as frequently as I should for good heart c care.	1	2	3	4	5	6	
I do exercise activities appropriate for my heart care.	1	2	3	4	5	6	
I exercise as frequently as required for my heart care.	1	2	3	4	5	6	
I keep medical appointments related to my heart care.	1	2	3	4	5	6	
I follow a heart healthy diet.	1	2	3	4	5	6	
I physically over-exert myself.	1	2	3	4	5	6	
I am at my recommended body weight.	1	2	3	4	5	6	
If I have any questions about my cardiac care or recovery, I ask the doctor or cardiac nurse.	1	2	3	4	5	6	
I have learned to manage stressful aspects of my life.	1	2	3	4	5	6	
I am a non-smoker.	yes = 6				no = 1		

established measures of Type A behavior such as the Structured Behavioral Interview (SI) and the Jenkins Activity Scale (JAS) (Blumenthal et al., 1985). The normative sample for the TSARI consisted of 197 men and 86 women with a diagnosis of heart disease. The mean age of the sample was 51.4 years. The mean of the Type A group's score (N=47) was approximately 122. This information was reported on a graph and no standard deviations were reported. Blumenthal et al. (1985) also reported that a study in progress with 87 male city employees had means scores on the TASRI of 111 (S.D.=15). They also reported on a second study in progress with a sample of college students, 52 men and 44 women, with a mean score of 112.5 (S.D.=15). In a study (Calder, Beach, & White, 1988) completed prior to this study, Cronback Alpha values for the TASRI were .89 for the cardiac patients and .88 for their spouses.

Heart Attack Locus of Control Scale. The Heart Disease Locus of Control Scale (HDLOCS) is intended to assess locus of control specific to heart disease (O'Connell & Price, 1985). The instrument has three subscales similar to its predecessors, the Internal/External Locus of Control Scale and the Multidimensional Locus of Control Scale. It has a five-point Likert response scale to assess the degree of agreement or disagreement with its items. On a sample of 50 health fair attenders and 51 non-health fair attenders, the instrument had a test-retest reliability of .83. In developmental work on the instrument, Cronbach Alpha estimates of the internal consistency of the three subscales were Internal=.83, Powerful Others=.76, and Chance=.86 (O'Connell & Price, 1985). The content validity for the HDLOCS was established by having authorities make a judgement on the adequacy of the items included in the instrument to measure the concepts being investigated. Criterion-related validity was established by correlating the subscales of the newly developed HDLOCS to the more widely recognized Multidimensional Health Locus of Control Scales. The corresponding subscales of the two inventories were correlated as follows: Internal=.57, Powerful Others=.69, and Chance=.73.

Construct validity of the HDLOCS was estimated by factor analysis. A minimum of .37 was used for acceptable loadings. Four factors were identified which accounted for 61% of the variance. The readability of the instrument was determined to be at a grade 9 (±1.5) reading level using the SMOG readability formula (O'Connell & Price, 1985).

In an earlier study (Calder, Beach & White, 1988) involving 50 couples from the U of A Hospitals Cardiac Rehabilitation Program, Cronbach Alpha values for the patients' Heart Disease Locus of Control scales were Internal=.78, Powerful Others=.67, and Chance=.82. For their spouses, the Cronbach Alpha values for the Heart Disease Locus of Control scales were Internal= .71, Powerful Others=.69, and Chance=.77.

In order to make the HDLOCS more appropriate for a sample which had already suffered heart disease, specifically a heart attack or was living with a spouse who had suffered a heart attack, minor editorial changes were made in the HDLOCS completed by the cardiac patients and their spouses in this study. For this study, the Heart Disease Locus of Control Scale was adapted to be specifically the Heart Attack Locus of Control Scale for the patients. While the HDLOCS items were worded as if heart disease is something that may be experienced in the future, the Heart Attack Locus of Control Scales (HALOCS) for the patients and their wives were worded to reflect that the patient had already experienced a heart attack. The wives completed the HALOCS relative to the degree of control they perceived their husbands had over their recovery from their heart attack.

Dyadic Adjustment Scale. The Dyadic Adjustment Scale (DAS) is a 32-item Likert scale designed to assess the quality of the relationship as perceived by married or cohabiting couples (Spanier, 1976). The DAS was developed using a sample of 218 married and 94 divorced persons. Their average ages were 35.1 years and 30.4 years respectively. The average length of marriage for the married sample was 13.2 years and the average length of marriage for the divorced sample was 8.5 years. The mean score on the total DAS for

the married sample was 114.8 (S.D.=17.8) and 70.7 (S.D.=23.8) for the divorced sample. Higher DAS scores reflect a better relationship.

The DAS total score has high internal consistency, with a Cronbach Alpha of .96. The DAS was also checked with logical content validity procedures. Criterion validity has been shown by the scale's ability to discriminate between married and divorced couples on each item (Spanier, 1976). The DAS has a correlation of $r=.86$ ($p<.001$) for married couples with the Locke-Wallace Marital Adjustment Scale, which is evidence of concurrent validity.

Health-Related Communication Scale. The Health-Related Communication Scale is a 13-item Likert scale developed for this study to assess the quality and degree of the couples' communication about the patient's heart attack and self-care behaviors following the heart attack. Table 2 is the patient's version. The wife's scale would have minor changes such as, *My husband and I can openly discuss any aspect of his heart attack.*

The scale was checked for content validity by a team of cardiac rehabilitation nurses who agreed that the items related to

TABLE 2

Health Related Communication Scale

	Strongly Disagree					Strongly Agree
My wife and I can openly discuss any aspect of my heart attack.	1	2	3	4	5	6
I am not satisfied with the way in which my wife and I can discuss any problems resulting from my heart attack.	1	2	3	4	5	6
I find it very helpful to discuss my health care with my wife.	1	2	3	4	5	6
I can not confide my concerns about my heart attack to my wife.	1	2	3	4	5	6
My wife shares her concerns about my heart attack with me.	1	2	3	4	5	6
My wife and I agree on our interpretation of the doctor's instructions for self-care following my heart attack.	1	2	3	4	5	6
My wife encourages me to practice good self-care behaviors.	1	2	3	4	5	6
I get angry when my wife reminds me about self-care behaviors.	1	2	3	4	5	6
My wife and I discuss how I can accomplish the self care behaviors important for my recovery following my heart attack.	1	2	3	4	5	6
My wife and I discuss everything relative to managing my recovery from my heart attack and maintaining my health.	1	2	3	4	5	6
My wife does not praise me for taking good care of myself.	1	2	3	4	5	6
I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	1	2	3	4	5	6
My heart attack is a topic that my wife and I do not discuss.	1	2	3	4	5	6

aspects of couple communication necessary for enhancing the patient's adherence to self-care following a heart attack.

Helpful Behaviors Scale. The Spouses' Helpful Behaviors Scale is a 21-item Likert scale developed for this study to assess the specific ways in which wives may help their husbands to be adherent to self-care behaviors following a heart attack. It was checked for content validity by a team of cardiac rehabilitation nurses who agreed that these spousal behaviors may be helpful in assisting the patient to be more compliant to self-care behaviors (see Table 3). The spouse's version has items changed to reflect her own view of her behavior (e.g. *I cook heart healthy meals).*

Procedures

Subjects and their spouses were recruited through the cardiac rehabilitation program offered at the University of Alberta Hospitals. As male heart attack patients came in for scheduled check-ups and stress tests, they were requested to participate in the study by either a cardiac rehabilitation nurse or the stress test technologist. If the patient expressed an interest or willingness to participate in the study, he was given a large envelope with prepaid postage containing a patient's questionnaire and a wife's questionnaire, each in its own unsealed envelope. A cover letter explaining the purpose of the study, that participation was entirely voluntary, and with instructions for completing the questionnaires and how to obtain additional information or help, was attached to each envelope containing the questionnaires. In order to assure that the couple would not influence each other's responses, each questionnaire was in its own envelope and respondents were advised not to consult with each other while completing their questionnaires. Once each respondent had completed his or her questionnaire, they were requested to put them inside the smaller envelope that each questionnaire had come in, to seal it, and to place them both in the larger prepaid envelope provided and return them by mail. In order to assure confidentiality, no names or addresses were obtained from any of the respondents. Questionnaires were coded to permit the matching of the patient with his wife.

TABLE 3

Spouses' Helpful Behaviors Scale Items

	Strongly Disagree					Strongly Agree	
She prepares heart healthy meals.	1	2	3	4	5	6	N/A
She eats the same meals that I do.	1	2	3	4	5	6	N/A
She reminds me when I eat something that I shouldn't.	1	2	3	4	5	6	N/A
She praises me for following my diet.	1	2	3	4	5	6	N/A
She reminds me to take my medications when I forget.	1	2	3	4	5	6	N/A
She reminds me to get a heart pill prescription refilled.	1	2	3	4	5	6	N/A
She keeps the house quiet while I rest.	1	2	3	4	5	6	N/A
She exercises with me, or goes with me when I exercise.	1	2	3	4	5	6	N/A
She does not plan activities that interfere with my heart care.	1	2	3	4	5	6	N/A
She encourages me to exercise regularly.	1	2	3	4	5	6	N/A
She reminds me not to over-exert myself.	1	2	3	4	5	6	N/A
She reminds me when I have a doctor's appointment.	1	2	3	4	5	6	N/A
She goes with me to my doctor's appointments.	1	2	3	4	5	6	N/A
She praises me for keeping my weight under control.	1	2	3	4	5	6	N/A
She has dieted with me to lose weight as well.	1	2	3	4	5	6	N/A
She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.	1	2	3	4	5	6	N/A
She encourages me to stop smoking or smoke less.	1	2	3	4	5	6	N/A
She does not smoke around me.	1	2	3	4	5	6	N/A
She encourages me to reduce the stress in my life.	1	2	3	4	5	6	N/A
She helps me to see the bright side of things.	1	2	3	4	5	6	N/A
She handles as many irritations as she can herself in order to avoid upsetting me.	1	2	3	4	5	6	N/A

Data Analysis

A Student's t-test for correlated groups was calculated on all variables and scale scores to determine if the means of the patients and their wives responses differed significantly. Correlations were computed between the combined adherence measure and the patients' and their wives' responses on many variables, and their scale scores, in order to describe the strength and direction of relationships between the dependent and independent variables.

A multiple, step-wise linear regression, using the patients' and their wives' scale scores as well as relevant demographic variables, was done in order to determine which of the independent variables would predict the level of the patient's adherence to self-care following a heart attack.

In order to compare the characteristics of the most adherent patients with those least adherent, groups comprised of the top 25% and the bottom 25% of the combined adherence scores were formed. ANOVAs were used to determine whether mean scores for the two groups on specific variables and scale scores for either the patients or their wives differed significantly from each other relative to the adherence measure.

An alpha level of .05 was deemed necessary to reject the statistical null hypothesis. In the following chapter, the results of the data analysis for the research questions are reported.

CHAPTER IV

RESULTS AND DISCUSSION

In the present study, the relationship between several patient and spousal characteristics such as Type A behavior, Heart Attack Locus of Control, marital adjustment, and health-related communication and the patient's adherence to self-care behaviors following a heart attack was investigated. A second area of investigation was the relationship between helpful behaviors of the spouse and the patient's adherence to self-care behaviors. Of the 212 questionnaire packages given out, 126 couples returned their questionnaires for analysis. This represents a return rate of 59%. The results revealed significant differences between patients who were within the top 25% of the adherence scores (compliers) and patients who were within the bottom 25% of the adherence scores (non-compliers). The findings have practical implications for cardiac rehabilitation programs.

A number of demographic variables were obtained in order to describe the sample of 126 couples. The average age of the patients was 57.3 years and ranged from 34 to 75 years. The average age of their wives was 54.5 years and ranged from 30 to 76 years. The couples had been married from 2 to 49 years, an average of 30.4 years. Forty percent of the couples reported having children still living at home. This group reported 1.6 children still at home, with the mode being one. Husbands reported an average of 12.4 years of education, ranging from 5 to 24 years. Their wives reported an average of 12.2 years of education, ranging from 5 to 23 years.

Eighty-three percent of the patients and 91% of their wives reported that relatives on the patient's side of the family had died of heart disease. Sixty-eight percent of the patients and 76% of their wives reported that relatives on the wife's side of the family had died of heart disease. While the wives reported a higher incidence of death due to heart disease within their relatives than did their husbands, the difference was not statistically significant. For both sides of the family, the wives reported higher frequency of death due to heart disease. This may be because the wives were

more aware of family history and health or it may reflect less denial on behalf of the wives than the patients.

The time the patients reported from having their first heart attack ranged from one month to 29.5 years. The average number of years since their first heart attack was 5.5 years. The range of time reported since the most recent heart attack was from one month to 19.6 years. The average time since the the most recent attack was three years. Sixty-two percent of the patients had experienced one heart attack, 27% had experienced two and 11% had experienced three to five heart attacks.

Seventy-three percent of the patients reported they seldom experienced pain; only 11% of the sample reported that they experienced daily or hourly pain. Of those reporting that they experienced pain, only 2% reported that they experienced severe pain. Twelve percent of the patients reported that they believed they had a severe degree of heart damage and 37% believed they had a moderate degree of damage. The remainder reported mild or no damage.

Thirty-eight percent of the wives indicated that they worked full-time outside the home, and 15% reported that they worked outside the home part-time. Forty-eight percent reported that they were full-time homemakers. Seventy-nine percent of the wives reported that their health was excellent or good. Sixty-six percent of the wives believed that their husbands would live a normal lifespan, but only 56% believed that their husbands would fully recover from the effects of their heart attacks. Twenty-five percent of the wives believed that their husbands would not have another heart attack; 22% thought that their husbands would reinfarct.

There was a weak inverse correlation between the patient's adherence and the wife's anger that the patient didnot care for himself and might have contributed to his heart attack ($r=.20$). There was a similar relationship between the spouse's anger at the changes that had occurred in her life as a result of the patient's heart attack and the patient's adherence to self-care behaviors

(r=.19). The wife's anger at the patient for not caring for himself was significantly greater for low complying than for high complying patients [F(1,57)=8.3, p=.00]. Anger at the changes that occurred in a spouse's life as a result of the heart attack was also significantly greater for the wives of low complying patients [F(1,57)=6.75, p=.01].

A number of variables were investigated relative to the patient's adherence to self-care behaviors following his heart attack. The statistical characteristics of the scales developed and used in the study and the findings of the study relative to the research hypotheses will be reported and discussed in the following sections.

Adherence.

The internal reliability of the Adherence Scale, estimated by a Cronbach Alpha, was .59 and .67 respectively for the patients and their wives. The patients reported higher levels of adherence on self-care behaviors for themselves (X=54.0, S.D.=6.2) than did their wives (X=52.7, S.D.=8.2). This finding is consistent with the literature; patients tend to over-estimate the degree of their adherence to medical regimens. The patients' and their wives' adherence scale scores were moderately correlated, r=.64. As there was a significant difference between the means of the patients' and their spouses' estimates of the patient's adherence (t=2.24, d.f.=125, p=.03), a combined score was calculated by averaging the two scores. This score was used as the overall measure of adherence. The Cronbach Alpha estimate of internal reliability of the combined adherence score was .75 (see Table 4 for the means, standard deviations, and response percentages for each scale item).

ANOVAs revealed that all items on the Adherence Scale (see Table 5), except for the question on smoking, differentiated between high complying patients and low complying patients using either the patient's or the wife's reports of the patient's adherence to self-care measures.

TABLE 4

Means, Standard Deviations, and Response Percentages for the Patients' and Their Wives' Responses on Adherence Scale Items

		Strongly Disagree					Strongly Agree		Mean (S.D.)
	H%	0	1	0	2	8	81	8	5.8 (0.6)
I use my medications as directed.		1	2	3	4	5	6	N/A	
	W%	0	0	1	2	9	83	5	5.8 (0.5)
	H%	1	4	7	28	33	27		4.7 (1.1)
I rest as frequently as I should for		1	2	3	4	5	6		
good cardiac care.	W%	2	5	15	14	22	42		4.8 (1.4)
	H%	2	3	5	16	32	37		5.0 (1.1)
I do exercise activities appropriate		1	2	3	4	5	6		
for my heart care.	W%	4	7	8	11	24	46		4.8 (1.5)
	H%	2	3	6	20	32	36		4.9 (1.2)
I exercise as frequently as required		1	2	3	4	5	6		
for my heart care.	W%	3	9	10	12	22	44		4.7 (1.5)
	H%	0	0	0	2	5	92		5.9 (0.4)
I keep medical appointments		1	2	3	4	5	6		
related to my heart care.	W%	1	0	0	2	6	92		5.9 (0.6)
	H%	1	2	4	16	51	27		5.0 (0.9)
I follow a heart healthy diet.		1	2	3	4	5	6		
	W%	2	3	7	22	34	33		4.8 (1.2)
	H%	21	21	15	28	13	2		3.0 (1.4)
I physically over-exert myself.		1	2	3	4	5	6		
	W%	22	16	10	29	14	8		3.2 (1.6)
	H%	9	10	19	19	19	24		4.0 (1.6)
I am at my recommended body weight.		1	2	3	4	5	6		
	W%	16	10	12	15	16	31		4.0 (1.8)
If I have any questions about my	H%	1	1	0	7	32	59		5.5 (0.8)
cardiac care or recovery, I ask the		1	2	3	4	5	6		
doctor or cardiac nurse.	W%	4	2	5	8	14	66		5.3 (1.3)
	H%	2	6	13	35	32	13		4.3 (1.1)
I have learned to manage stressful		1	2	3	4	5	6		
aspects of my life.	W%	7	9	14	35	17	17		4.0 (1.4)
	H%			83		17			
I am a non-smoker.				yes		no			
	W%			79		21			

TABLE 5

Means and Standard Deviations of Most Adherent and Least Adherent Patients on the Adherence Scale Items

PATIENT ITEMS	Most Adherent	Least Adherent	Probability
I use my medications as directed.	6.0(.0)	5.6(.6)	.00
I rest as frequently as I should for good heart care.	5.2(1.0)	4.1(1.1)	.00
I do exercise activities appropriate for my heart care.	5.7(.5)	3.8(1.3)	.00
I exercise as frequently as required for my heart care.	5.6(.6)	3.7(1.3)	.00
I follow a heart healthy diet.	5.5(.5)	4.3(1.1)	.00
I physically over-exert myself.	5.0(1.2)	3.5(1.4)	.00
I am at my recommended body weight.	5.1(1.2)	3.1(1.6)	.00
If I have any questions about my cardiac care or recovery, I ask the doctor or cardiac nurse.	5.7(.5)	5.1(1.2)	.00
I have learned to manage stressful aspects of my life.	4.7(1.1)	3.9(1.3)	.01
WIFE'S ITEMS			
My husband uses his medications as directed.	6.0(0)	5.7(.7)	.01
My husband rests as frequently as he should for good heart care.	5.6(.9)	3.6(1.5)	.00
My husband does exercise activities appropriate for heart care.	5.9(.4)	3.4(1.6)	.00
My husband exercises as frequently as required for heart care.	5.8(.5)	3.2(1.4)	.00
He keeps medical appointments related to his heart care.	6.0(.0)	5.6(1)	.04
My husband follows a heart healthy diet.	5.8(.5)	3.7(1.2)	.00
My husband physically over-exerts himself.	4.8(1.3)	3.1(1.4)	.00
My husband is at his recommended body weight.	5.2(1.3)	2.7(1.7)	.00
If my husband has any questions about his cardiac care or recovery, he asks the doctor or cardiac nurse.	5.9(.4)	4.2(1.8)	.00
My husband has learned to manage the stress in his life.	4.9(1.1)	2.8(1.3)	.00

Type A Personality.

The mean TASRI scores of this study sample appear to be lower than the normative sample. In fact, they were more comparable to non-clinical samples not experiencing heart disease. The standard deviation of the measure is so large as to make the identification of significant differences between the groups impossible. In the present study, the means of the Type A score for the patients and their spouses was 117 (S.D.=17) and 113 (S.D.=18) respectively. Cronbach Alpha values for the TASRI were .85 and .86 for the patients and their wives respectively. A t-test revealed that there was no significant difference between their scores. Patients and their wives were relatively the same on this measure of Type A behavior.

It was predicted that because of the characteristics of Type A behavior such as impatience, hostility, and competitiveness there would be an inverse relationship between adherence to self-care behaviors and the Type A measure of both the patients and the wives. A statistically significant, but weak, inverse relationship between the patient's Type A score and the combined adherence score ($r=-.16$) was found. There was no significant relationship between the wife's Type A score and the combined adherence score.

An ANOVA revealed that there were no statistically significant differences between the patients' and their spouses' Type A scores relative to the top 25% and the bottom 25% of adherence scores. This would indicate that with this sample, the Type A behavior characteristics of the patients and their spouses would not differentiate between patients who were most adherent and those who were least adherent.

Blaney, Brown, and Blaney (1986) found that Type A men married to Type B wives were more prone to coronary disease than other pairings. This finding raised the question of interactive effects between couples in which the husband had already suffered heart disease and the effect that Type A characteristics of either the patient or his spouse might have on the patient's adherence to self-care behaviors. The results of this study indicate that Type A

behavior characteristics of the patients or their wives, as measured by the TASRI, do not appear to influence the patient's level of adherence to self-care behaviors following a heart attack. There is no evidence to support a finding of interactive effects between the patient's and his wife's Type A behavior score and the patient's adherence to self-care behaviors following a heart attack.

Heart Attack Locus of Control.

For the patients, the Cronbach Alpha estimate of the internal consistency of the total Heart Attack Locus of Control scale was .61. For the subscales, the results were as follows: Internal=.70, Powerful Others=.49, and Chance=.78. For the wives, the Cronbach Alpha estimate of the internal consistency of the total Heart Attack Locus of Control scale was .77 For the subscales, the results were as follows: Internal=.68, Powerful Others=.63, and Chance=.84.

The findings for the patients are consistent with most of the literature. There was a significant, but small, relationship between the patient's internality and his adherence to self-care behaviors (r=.18). Patients who were most adherent had significantly higher internality scores than those who were least adherent [F(1,57)=5.59, p= .02]. The mean scores of the most and least adherent patient groups were 37.5 (S.D.=4.2) and 34.8(S.D.=4.4) respectively.

It was hypothesized that if a patient's wife had an internal locus of control relative to her husband's heart attack, the patient would be more adherent to self-care behaviors. It was expected that if a wife believed that the patient had control over his own health and recovery, the patient would be more responsible for his own health and consequently be more adherent to health care behaviors. Results did not support this hypothesis, as there was a nonsignificant, weak, inverse relationship (r=-.13). An ANOVA indicated that there was no significant difference in the wife's internality relative to the patient's heart disease with patients who were high compliers and those who were low compliers. It appears that the wife's beliefs about the patient's ability to manage his

heart disease did not differentiate between most and least adherent patients.

The results also revealed a weak, but significant, inverse relationship between the patient's Chance Locus of Control scores and his adherence to self-care behaviors (r=-.19). Patients who believed their health was a matter of chance were less adherent. However, there was not a significant difference between the chance locus of control scores of patients who were most adherent and those who were least adherent.

Marital Adjustment.

The mean scores for the patients and their wives on the Dyadic Adjustment Scale (DAS) were 108.9 (S.D.=16.9) and 108.6 (S.D.=20.6) respectively. Even though the sample in the present study was considerably older and married a longer period of time than the norming sample, their DAS scores fell only -.34 S.D. below the scores of the married norming sample which had a mean age of 35 years compared to 55.9 years for the study sample. The norming sample had been married an average of 13 years compared to 30.4 years for the study sample. In this study, the DAS had a Cronbach Alpha of .93 and .94 for the patients and their spouses respectively, comparable to that reported by the developers of the scale, Cronbach Alpha =.96.

The patients' and their wives' DAS scores were moderately related (r=.63). There was no significant difference between the means of the patients and their wives on either the full scale score or the subscale scores. Marital adjustment for both patients and wives was significantly related to the patient's adherence (r=.32) and (r=.23) respectively. Most adherent patients reported significantly higher levels of marital satisfaction (X=118, S.D.=9.6) than least adherent patients (X=101, S.D.=18.8), [F(1,57)=18.56, p=.00]. The wives of most adherent patients reported a significantly higher degree of marital adjustment (X=114, S.D.=25.9) than the wives of least adherent patients (X=99.9, S.D.=21.6), [F(1,57)=5.28, p=.00]. The results of this study indicate that there is a

significant direct relationship between patients reporting a higher degree of adherence to self-care behaviors following a heart attack and a greater reported marital adjustment for both patients and their wives. This is consistent with the literature which indicates that social support, particularly from the spouse, enhances a patient's adherence to a medical regimen.

Health-Related Communication.

As there were no known studies or scales assessing health-related communication between couples with one a cardiac patient, a unique aspect of this research is the development of a Health-Related Communication Scale used in this study. A Cronbach Alpha statistic reflected an internal consistency of .78 for the patients and .85 for their wives, with mean scale scores of 65.7 (S.D.=8.8) and 63.7 (S.D.=11) respectively. There was a significant difference between the means of these scores ($T=2.02$, d.f.=125, $p=.05$). The patients reported significantly higher levels of health-related communication than their wives. See Table 6 for the means, standard deviations, and response percentages for each item on this scale for the patients and their spouses.

A significant relationship was found between the adherence score and the health-related communication scores for both the patients ($r=.53$) and their wives ($r=.45$). Patients who were most adherent also had significantly higher rates of health-related communication ($X=70.5$, S.D.=5.1) than those who were least adherent ($X=60$, S.D.=7) [$F(1,57)=28.46$, $p=.00$]. Patients who were most adherent had wives who reported significantly higher rates of health-related communication ($X=69.4$, S.D.=6.9) than the wives of patients who were least adherent ($X=56.7$, S.D.=12.4) [$F(1,57)=22.50$, $p=.00$].

Many items on this scale differentiated most adherent from least adherent patients. For these items, the greater the degree of health- related communication, the greater the patient's adherence toself-care behaviors (see Table 7). When the responses of the most

TABLE 6

Means, Standard Deviations, and Response Percentages for Patients and Their Spouses on the Health-Related Communication Scale

	Strongly Disagree					Strongly Agree	Mean (S.D.)
	H%	1	0	2	4	23	71	5.6 (0.8)
My wife and I can openly discuss any		1	2	3	4	5	6	
aspect of my heart attack.	W%	1	2	4	7	11	75	5.5 (1.0)
	H%	60	12	9	8	5	6	2.0 (1.5)
I'm not satisfied with the way in which my wife and I can discuss problems		1	2	3	4	5	6	
resulting from my heart attack.	W%	62	12	3	10	6	7	2.1 (1.7)
	H%	2	1	2	14	33	47	5.2 (1.1)
I find it very helpful to discuss my		1	2	3	4	5	6	
health care with my wife.	W%	0	0	3	12	16	69	5.5 (0.8)
	H%	55	14	5	9	9	8	2.3 (1.7)
I can not confide my concerns		1	2	3	4	5	6	
about my heart attack to my wife.	W%	39	14	5	14	13	16	3.0 (2.0)
	H%	2	2	6	8	25	58	5.5 (1.1)
My wife shares her concerns		1	2	3	4	5	6	
about my heart attack with me.	W%	5	9	5	15	31	35	4.6 (1.5)
	H%	1	2	2	9	28	58	5.4 (1.0)
My wife and I agree on our interpretation of the doctor's instructions		1	2	3	4	5	6	
for self-care following my heart attack.	W%	2	1	3	10	20	64	5.4 (1.0)
	H%	1	1	3	6	26	63	5.4 (.9)
My wife encourages me to practice		1	2	3	4	5	6	
good self-care behaviors.	W%	1	1	1	6	25	67	5.5 (0.8)
	H%	34	29	6	19	9	3	2.5 (1.5)
I get angry when my wife reminds		1	2	3	4	5	6	
me about self-care behaviors.	W%	37	11	9	17	13	14	3.0 (1.9)
	H%	1	3	5	20	30	41	5.0 (1.1)
My wife and I discuss how I can accomplish self-care behaviors		1	2	3	4	5	6	
important for recovery after my M.I.	W%	3	2	3	19	25	47	5.0 (1.2)

TABLE 6 continued		Strongly Disagree					Strongly Agree	Mean (S.D.)
My wife and I discuss everything related to managing my recovery from my M.I. and maintaining my health.	H%	2	3	2	16	37	40	5.0 (1.1)
		1	2	3	4	5	6	
	W%	4	3	2	16	22	52	5.1 (1.3)
My wife does not praise me for taking good care of myself.	H%	39	23	12	15	6	4	2.4 (1.5)
		1	2	3	4	5	6	
	W%	45	18	9	16	8	4	2.3 (1.6)
I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	H%	2	4	10	22	27	35	4.7 (1.2)
		1	2	3	4	5	6	
	W%	8	8	6	29	21	28	4.3 (1.5)
My heart attack is a topic that my wife and I do not discuss.	H%	71	11	7	4	4	3	1.7 (1.3)
		1	2	3	4	5	6	
	W%	65	14	3	8	5	5	1.9 (1.5)

TABLE 7

A Comparison of the Means and Standard Deviations of Most Adherent and Least Adherent Patients on Items in the Health Related Communication Scale

PATIENT'S ITEMS	Most Adherent	Least Adherent	Probability
My wife and I can openly discuss any aspect of my heart attack.	5.9(0.4)	5.2(0.4)	.00
I find it very helpful to discuss my health care with my wife.	5.7(.5)	4.5(1.1)	.00
My wife shares her concerns about my heart attack with me.	5.6(.6)	4.9(1.2)	.01
My wife and I agree on our interpretation of the doctor's instructions for self-care following my heart attack.	5.7(0.4)	4.9(1.3)	.00
My wife encourages me to practice good self-care behaviors.	5.7(1.0)	5.0(1.1)	.01
My wife and I discuss how I can accomplish self-care behaviors important for my recovery from my heart attack.	5.7(0.5)	4.3(1.0)	.00
My wife and I discuss everything relative to managing my recovery from my heart attack and maintaining my health.	5.6(0.5)	4.5(1.1)	.00
I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	5.3(0.9)	4.5(1.2)	.01
My heart attack is a topic that my wife and I don't discuss.	5.6(1.2)	4.7(1.6)	.01
WIFE'S ITEMS	Most Adherent	Least Adherent	Probability
My husband and I can discuss any aspect of his heart attack.	5.8(0.8)	5.0(1.4)	.01
I find it very helpful to be able to discuss my husband's health care with him.	5.7(0.7)	5.2(1.0)	.02
My husband shares concerns about his heart attack with me.	5.1(1.1)	4.3(1.6)	.03
My husband and I agree on our interpretation of the doctor's instructions for self-care following his heart attack.	5.8(0.4)	4.8(1.5)	.00
I encourage my husband to practice good self-care behaviors.	5.9(0.3)	5.3(1.10)	.01
My husband gets angry if I remind him of self-care behaviors.	4.8(1.7)	3.0(1.8)	.00

TABLE 7 continued

WIFE'S ITEMS (continued)	Most Adherent	Least Adherent	Probability
My husband and I discuss how he can accomplish self-care behaviors important for recovery following his heart attack.	5.6(0.7)	4.3(1.5)	.00
My husband and I discuss everything relative to managing his recovery from his heart attack and maintaining his health.	5.7(0.6)	4.1(1.7)	.00
My husband expresses appreciation for my encouragement and help relative to his efforts to regain and maintain his health.	4.9(1.2)	3.5(1.6)	.00
My husband's heart attack is a topic that we do not discuss.	5.6(1.0)	4.6(1.6)	.02

adherent versus the least adherent patients were compared on each item in the Health-Related Communication scale, 9 out of 13 items had a significant difference. For the wives of the most and least adherent patients, 10 out of 13 items on the Health-Related Communication scale showed a significant difference.

Of interest is the finding that the wives of least adherent patients indicated that their husbands became angry when reminded about self-care behaviors, to a significantly greater degree, than did the wives of most adherent patients. There was no significant difference between the scores of the most and least adherent patients reporting whether they became angry when their wives reminded them about self-care behaviors. Also, the scores of the patients reflect a lower degree of anger at being reminded about self-care behaviors ($X=2.51$, $S.D.=1.49$) than do their wives' scores ($X=2.96$, $S.D.=1.86$). There was a significant difference between the means of the two scores ($T=-2.32$, $d.f.=123$, $p=.02$). Apparently the wives perceived a significantly greater amount of anger from their husbands when they reminded them about self-care behaviors than what the patients perceived in themselves.

Of particular significance is that the patient's and wife's health-related communication scores accounted for 41% of the variance in predicting the patient's adherence to self-care behaviors (see Appendix E). The results of this study indicate that health-related communication, for both the patients and their wives, predicts success in adherence to self-care behaviors following a heart attack.

The literature indicates that when dealing with stressful issues such as adjustment to cancer and chronic disease, the capacity to have open, clear communication in order to maintain a healthy marital relationship and renegotiate role changes and enhance adjustment is very important (Speigal, et al., 1983; Stuifbergan, 1987; Vess, et al., 1985; Waltz, 1986). Similarly, the results of this study support the suggestion that it is important for couples to maintain an optimal level of health related communication in order to plan for self-care behaviors, negotiate

lifestyle changes, and deal with the emotional issues that may be necessary to regain or maintain the patient's optimal level of health following a heart attack.

Spouse's Helpful Behaviors.

The internal consistency of the Spouse's Helpful Behaviors Scale, using the Cronbach Alpha as a measure of inter-item consistency, was .89 for the patients and .87 for their spouses. The mean scores on this scale for the patients and their wives were X=98.7 (S.D.=15.5) and X=98.6 (S.D.=14.8) respectively. The patient's and their spouse's perceptions of the spouse's helpful behaviors were moderately related (r=.49 and r=.42 respectively) to the patient's adherence to self-care behaviors. See Table 8 for the means, standard deviations, and response percentages for both the patients and their spouses for each scale item.

The patients who perceived their spouses as performing helpful behaviors to a higher degree, or the spouses perceiving themselves as performing helpful behaviors to a higher degree, differentiated the most adherent patients from the least adherent patients on most items in the scale (see Table 9). Patients who were most adherent reported that their wives performed helpful behaviors to a significantly higher degree (X=105.6, S.D.=11), [F(1,57)=16.82, p=.00] than did patients who were least adherent (X=90, S.D.=15.8). This pattern was also true for the wives. Wives of the most adherent patients perceived that they performed helpful behaviors to a greater degree (X=102.5, S.D.=14.5) than did the wives of least adherent patients (X=91.6, S.D.=14.5), [F(1,57)=8.17, p=.01].

The study also investigated the wife's specific behaviors which contributed to the patient adhering to a higher degree to self-care behaviors. On the Spouse's Helpful Behaviors Scale 14 out of 21 items showed a significant difference between the most adherent and the least adherent patients. The most adherent patients reported that their wives performed the following behaviors to a significantly higher degree than what the least adherent patients

TABLE 8

Means, Standard Deviations, and Response Percentages for Patients and Their Spouses on the Spouse's Helpful Behaviors Scale

	Strongly Disagree						Strongly Agree		Mean (S.D.)
	H%	0	0	4	10	37	48	0	5.3(0.8)
She prepares heart healthy meals.		1	2	3	4	5	6	N/A	
	W%	0	1	4	13	36	47	0	5.2(0.9)
	H%	2	2	6	10	21	60	0	5.3(1.1)
She eats the same meals that I do.		1	2	3	4	5	6	N/A	
	W%	0	1	3	12	23	61	0	5.4(0.9)
	H%	0	2	5	9	30	54	0	5.3(0.9)
She reminds me when I eat something		1	2	3	4	5	6	N/A	
that I shouldn't.	W%	7	5	2	17	22	48	0	4.9(1.4)
	H%	2	3	10	17	21	38	7	4.8(1.3)
She praises me for following my diet.		1	2	3	4	5	6	N/A	
	W%	5	2	6	22	27	33	6	4.7(1.3)
	H%	6	4	9	6	13	52	11	4.9(1.6)
She reminds me to take my medications		1	2	3	4	5	6	N/A	
when I forget.	W%	6	1	1	9	13	58	13	5.3(1.4)
	H%	10	3	4	15	9	43	15	4.6(1.8)
She reminds me to get a heart pill		1	2	3	4	5	6	N/A	
prescription refilled.	W%	14	3	2	8	9	40	23	4.5(2.0)
	H%	3	2	5	13	25	43	9	5.0(1.3)
She keeps the house quiet while I rest.		1	2	3	4	5	6	N/A	
	W%	3	1	2	10	20	44	21	5.2(1.2)
	H%	21	9	11	17	18	19	4	3.6(1.8)
She exercises with me, or goes with		1	2	3	4	5	6	N/A	
me when I exercise.	W%	21	9	11	17	18	19	4	3.6(1.8)
	H%	1	0	6	13	25	52	3	5.2(1.0)
She does not plan activities that		1	2	3	4	5	6	N/A	
interfere with my heart care.	W%	2	1	1	11	27	38	16	5.1(1.1)
	H%	2	2	7	15	25	46	2	5.0(1.2)
She encourages me to exercise		1	2	3	4	5	6	N/A	
regularly.	W%	6	1	1	19	20	45	7	5.0(1.4)

TABLE 8 continued	Strongly Disagree					Strongly Agree		Mean (S.D.)
	H%	2	1	5	7	28	57	1	5.3(1.0)
		1	2	3	4	5	6	N/A	
She reminds me not to over-exert myself.	W%	3	2	2	9	23	59	2	5.3(1.2)
	H%	3	3	6	9	16	60	2	5.2(1.3)
		1	2	3	4	5	6	N/A	
She reminds me when I have a doctor's appointment.	W%	11	1	2	11	10	55	9	4.9(1.7)
	H%	17	12	11	17	11	27	5	3.8(1.9)
		1	2	3	4	5	6	N/A	
She goes with me to my doctor's appointment.	W%	25	4	6	15	14	25	11	3.8(2.0)
	H%	6	5	10	25	23	22	9	4.3(1.4)
		1	2	3	4	5	6	N/A	
She praises me for keeping my weight under control.	W%	6	3	5	26	16	29	14	4.5(1.5)
	H%	19	9	5	12	17	22	16	3.8(1.9)
		1	2	3	4	5	6	N/A	
She has dieted with me to lose weight as well.	W%	13	2	3	18	13	29	21	4.3(1.8)
	H%	3	4	5	4	19	63	2	5.3(1.3)
		1	2	3	4	5	6	N/A	
She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.	W%	2	2	1	6	10	77	2	5.5(1.1)
	H%	0	1	1	3	5	25	65	5.5(0.9)
		1	2	3	4	5	6	N/A	
She encourages me to stop smoking or smoke less.	W%	1	1	1	1	1	21	73	5.3(1.4)
	H%	14	1	5	3	2	23	52	4.0(2.2)
		1	2	3	4	5	6	N/A	
She does not smoke around me.	W%	13	1	2	5	2	12	64	3.5(2.2)
	H%	1	2	5	18	25	47	2	5.1(1.1)
		1	2	3	4	5	6	N/A	
She encourages me to reduce the stress in my life.	W%	2	2	1	11	17	61	6	5.4(1.1)
	H%	2	3	7	13	27	47	1	5.0(1.2)
		1	2	3	4	5	6	N/A	
She helps me to see the bright side of things.	W%	1	2	2	13	24	58	1	5.3(1.0)
	H%	1	4	9	22	27	37	0	4.8(1.2)
		1	2	3	4	5	6	N/A	
She handles as many irritations as she can herself, to avoid upsetting me.	W%	2	2	2	15	21	54	3	5.2(1.1)

TABLE 9

Means and Standard Deviations of Most Adherent and Least Adherent Patients and Spouses on Spouse's Helpful Behaviors Scale Items.

PATIENT ITEMS	Most Adherent	Least Adherent	Probability
She prepares heart healthy meals.	5.9(0.3)	4.7(1.0)	.00
She reminds me when I eat something I shouldn't.	5.8(0.4)	5.2(0.8)	.00
She praises me for following my diet.	5.5(0.8)	4.2(1.5)	.00
She reminds me to take my medications when I forget.	5.3(1.5)	4.2(1.7)	.04
She keeps the house quiet when I rest.	5.5(0.9)	4.6(1.6)	.04
She exercises with me or goes with me when I exercise.	4.3(1.7)	2.6(1.6)	.00
She does not plan activities that interfere with my heart care.	5.6(0.7)	4.8(0.2)	.00
She encourages me to exercise regularly.	5.5(0.8)	4.4(1.3)	.00
She reminds me not to over-exert myself.	5.7(0.6)	4.7(1.5)	.00
She goes with me to my doctor's appointments.	4.3(1.9)	3.3(2.0)	.04
She has dieted with me to lose weight as well.	4.7(1.9)	3.1(1.9)	.01
She encourages me to ask questions about my cardiac care.	5.7(0.5)	4.8(1.7)	.01
She helps me see the bright side of things.	5.4(0.8)	4.8(1.2)	.02
She handles as many irritations as she can herself to avoid upsetting me.	5.1(0.9)	4.5(1.3)	.04
WIFE'S ITEMS			
I praise him for following his diet.	5.0(1.5)	4.2(1.3)	.04
I remind him to take his medications when he forgets.	5.7(0.8)	4.7(1.7)	.02
I keep the house quiet when he rests during the day.	5.7(0.6)	4.6(1.7)	.02
I join him when he exercises.	4.8(1.4)	2.6(1.5)	.00
I go with him to his doctor's appointments.	4.8(1.9)	3.3(2.0)	.01
I praise him for keeping his weight under control.	5.1(1.3)	4.2(1.7)	.04
I diet with him to help him lose weight.	4.9(1.7)	3.6(1.9)	.02
I encourage him to ask questions about his heart care.	5.8(0.5)	5.1(1.5)	.02
I don't smoke around him.	4.6(2.2)	2.2(1.8)	.02

reported: prepared heart healthy meals [F(1,57)=37.43, p<.00], praised them for following their diets [F(1,51)=13.60, p<.00], reminded them when they ate something that they shouldn't [F(1,57)=13.17, p<.00], and reminded them to take their medications when they forgot [F(1,50)=4.57, p<.04]. They also reported that their wives had dieted with them in order to lose weight as well [F(1,46)=7.99, p<.01].

The most adherent patients compared to the least adherent patients, reported that their wives encouraged them to exercise regularly [F(1,57)=15.11, p<.00], reminded them not to over-exert themselves [F(1,57)=9.56, p<.00], and exercised with them or went with them when they exercised [F(1,55)=14.61, p<.00]. They also reported that their wives kept the house quiet when they rested [F(1,51)=4.65, p<.04] and planned activities that did not interfere with their heart care [F(1,56)=9.26, p<.00].

The most adherent patients, more than the least adherent patients, reported that their wives went with them to doctors' appointments [F(1,55)=4.31, p<.04] and encouraged them to ask medical personnel questions regarding their cardiac care [F(1,55)=7.20, p<.01]. In contrast to the least adherent patients, the most adherent patients reported to a significantly greater degree that their wives handled many irritations themselves in order to avoid upsetting the patient [F(1,57)=4.21, p<.04] and helped the patient to see the bright side of things [F(1,57)=5.59, p<.02].

A second focus on helpful behaviors of the wife was the degree of congruence between the patient's and his wife's perception of the degree to which the wife performed specific behaviors. While there was not a significant difference in the total scores between the patient's and the wife's perception of the wife's helpful behaviors, there were significant differences on several items. In most instances, the wife perceived herself as doing a task more than the patient reported it was done. The following scale items reflect a significant difference between the responses of the patients and their spouses. Wives were more likely to report that they reminded the patient to take medication (T=-2.35, D.F.=103, p=.02), dieted

with him to assist him with his diet (T=-2.53, D.F.=89, p=.01), encouraged him to ask health personnel questions regarding his care (T=-2.16, D.F.=117, p=.03), helped him see the bright side of things (T =-2.83, D.F.=123, p=.005), and handled as many irritations as possible herself in order to avoid upsetting him (T=-2.61, D.F.=120, p=.01). This difference in perception of helpful behaviors may indicate that the patient did not fully appreciate his wife's efforts to assist him in his recovery. The wives reported that they reminded the patient when he ate something he shouldn't to a significantly lesser degree than did the patients (T=2.88, D.F.=124, p=.005).

The final area of investigation was to identify which study variables best predicted the patient's adherence. All scale values for the patients and spouses (Internal Locus of Control, marital adjustment, health-related communication, and helpful behaviors) except for the Type A measure, were entered into a regression analysis. The following variables accounted for 45% of the explained variance in predicting the patient's adherence to self-care behaviors following a heart attack: Patient's Health-Related Communication score [F(1,57)=28.46, p<.00], Wife's Health-Related Communication score [F(2,56)=19.64, p<.00], and the patient's perception of his wife's helpful behaviors [F(3,55)=15.25, p<.00].

CHAPTER V

SUMMARY AND CONCLUSIONS

This chapter presents a summary and draws conclusions from the present study. Limitations of the study are identified and suggestions for future research are provided.

Several variables that were thought to be particularly relevant to a heart attack patient's adherence to self-care behaviors were the focus of this study. The dependent variable, developed for use in this study, was a measure assessing the patient's adherence to self-care behaviors. It was completed by both the patient and his spouse.

The patient's adherence to self-care behaviors required for rehabilitation after a heart attack may be influenced or predicted by the characteristics and behaviors of the patient as well as the patient's spouse. The independent variables chosen to predict the patient's adherence to self-care behaviors were measures of both the patient's and their spouse's Type A behavior, Heart Attack Locus of Control, marital adjustment, health-related communication, and perception of the degree to which the wife performs specific behaviors which help the patient to be more adherent to self-care behaviors.

Generally it was found that characteristics of both the patients and their spouses were related to the patients' adherence to self-care behaviors and that characteristics of the patients and their spouses differentiated the most adherent patients (top 25%) and the least adherent patients (bottom 25%).

The following conclusions can be drawn from the present study:

(1) Consistent with previous reports (Derenowski, 1988; DiMatteo & DiNicola, 1982; Lefcourt, 1981), patients who scored highest on the Internal subscale of the Heart Attack Locus of Control scale were significantly more adherent than those who scored lowest.

The wife's expectations of the patient's internality relative to his self-care following his heart attack was not significantly related to the patient's adherence. In other words, the wife

expecting the patient to be self-directed relative to self-care behaviors required for cardiac rehabilitation did not significantly differentiate the most and least adherent patients. This finding is is inconsistent with previous findings (Miller et al., 1988a; Miller et al., 1989) that cardiac patients' perceived beliefs of others relative to the their adherence increases the likelihood of adhering to self-care behaviors.

(2) Significantly higher rates of marital adjustment were reported by the most adherent patients and the spouses of the most adherent patients when compared to the least adherent patients. Consistent with the limited literature in the area (Kline & Warren, 1983; Riegel, 1989; Waltz, 1986), the results of this study indicate that marital adjustment is directly related to adjustment following a major health crisis such as a myocardial infarction. An aspect of marital adjustment investigated was the wife's anger at her husband for having a heart attack, at his not caring for himself, and at the changes which occurred in her life because of his heart attack. The wife's feelings of anger that her husband had experienced a heart attack was significantly and inversely related to the patient's report of the spouse's helpful behaviors ($r=-.15$), the wife's report of her helpful behaviors ($r=-.21$), the wife's health-related communication score ($r=-.22$), and the patient's marital satisfaction ($r=-.17$). The wife's anger at her husband for not caring for himself which might have contributed to the heart attack was significantly and inversely related to the patient's adherence score ($r=-.20$), the patient's perception of his spouse's helpful behaviors score ($r=-.16$), and both the patient's and his wife's health-related communication scores ($r=-.17$ and $r=-.24$ respectively). The wife's anger at the changes that had occurred in her life as a result of her husband's heart attack was also significantly and inversely related to the patient's adherence
($r=-.19$), the patient's perception of the wife's helpful behaviors ($r=-.19$), the patient's marital satisfaction ($r=-.22$), ($r=-.22$), and the patient's and wife's health-related communication ($r=-.25$ and $r=-.25$ respectively). This finding suggests that with least adherent

patient's a wife's feelings of anger need to be explored and attended to. It may also be that her anger is reflective of a low degree of marital adjustment which existed prior to the heart attack.

(3) Health-related communication scores of both the patients and their spouses were related to the patients' adherence to self-care behaviors. Significantly higher rates of health-related communication were reported by the most adherent patients as well as by the spouses of the most adherent patients compared to the least adherent patients and their spouses. These findings are consistent with the literature (Ben-Sira & Eliezer, 1990; Bruhn, 1977; Fournet & Schaubhut, 1986; Waltz, 1986) which indicated open communication between the patient and his spouse is necessary for adaptation and adjustment following cardiac illness.

(4) Significantly higher rates of spouses' helpful behaviors were reported by the most adherent patients as well as the spouses of the most adherent patients compared to the least adherent patients and their spouses. These findings are consistent with previous studies that have defined social support in terms of specific behaviors of the spouse (Bramwell, 1986; Derenowski, 1988; Dohertyet al., 1983; Klinger, 1984; Mayou et al., 1978; Mayou, 1979; Reid et al., 1984). These studies reported that the spouse's involvement or sharing various aspects of the patient's self-care behaviors increased the patient's adherence to self-care behaviors.

This scale has potential as a means for cardiac rehabilitation personnel to identify or suggest specific behaviors the spouse might perform in assisting the patient to achieve adherence to self-care behaviors. It may also be useful to check the couple's concensus on what help is needed and whether help is being given to the degree the patient finds helpful. This scale could be improved by the addition of a column in which the patient could indicate whether the behaviors should be performed to a greater or lesser degree to be most helpful.

(5) Type A behavior of neither the patients nor their spouses differentiated the most adherent from the least adherent patients in this study. However, the patient's Type A score was negatively

correlated with both the patient's and the spouse's Health-Related Communication score (r=-.18 and r=-.16 respectively). There was also an inverse relationship between the patient's Type A scores and the spouse's helpful behaviors score (r=-.17). While the results of this study do not relate Type A behavior to the patient's adherence to self-care behaviors, it appears that the patient's Type A behavior does not facilitate interaction between the couple that results in the patients having a higher degree of adherence to self-care behaviors.

Practical Applications

The results of this study indicate that the patient's internality and the patient's and his spouse's marital adjustment, health-related communication, and perception of the spouse's helpful behaviors significantly differentiate high- and low-complying patients. As the most significant predictor of the patient's adherence to self-care behaviors is the patient's and his wife's health-related communication scores, cardiac rehabilitation programs would be advised to investigate this aspect of the couple's functioning. It would likely be most helpful if the level of health-related communication between the couple was assessed when the patient enters the earliest stage of cardiac rehabilitation. Even if an adequate level of skill in this area is judged to be present, periodic checks should be made in order to assist the couple over specific areas of difficulty that may arise throughout the patient's rehabilitation. As adherence to self-care behaviors is an ongoing and long-term process involving both the patient and those he lives with, it is to be expected that issues may occur over time. It is important to assess if the degree of health-related communication is adequate to meet the demands of patient's particular needs and those of his spouse, relative to their adjustment after the husband's heart attack. If deficits in the couple's ability to communicate on health-related issues are identified, cardiac rehabilitation personnel with expertise in this area could offer assistance or refer the couple to health team professionals who could assist them in

developing better communication skills, particularly relative to the patient's health.

The health-related communication scale developed for this study would be a good instrument with which to start assessing the adequacy of the couple's communication. It is an easily administered, self-report measure of 13 items which requires less than two minutes to complete. The addition of an open-ended statement allowing for additional areas of concern would enable cardiac rehabilitation personnel to flag other areas of need or concern to the couple.

The adherence of patients when the patient and his wife reported higher levels of marital adjustment was significantly higher than the adherence of patients and their wives with lower levels of marital adjustment. As serious illness and chronic illness can be a source of stress to the marital relationship, cardiac rehabilitation personnel must be alert to the possibility that some couples may benefit from marital counselling during this stressful time. Brief therapy may be helpful to these couples. However, some couples may have experienced low levels of marital adjustment for many years, resulting in stress which may have contributed to the occurrence of the heart attack (Waltz, 1986). In this instance, the couple would need more intensive therapy to significantly improve their level of marital satisfaction.

The marital adjustment scores of this sample did not differ significantly from those of the sample used to norm the Dyadic Adjustment Scale. This makes one question the commonly held assumption that a heart attack will cause marital disruption. What is significant is that high complying patients had significantly higher marital adjustment scores than patients who were least compliant. As marital adjustment and health-related communication were moderately correlated for both the patient ($r=.56$) and the spouse ($r=.53$), it may be that improving either would result in an increase in the other.

The number of spouse's helpful behaviors and the degree to which they were perceived as being performed also differentiated

high compliers from low compliers. Cardiac rehabilitation personnel working with cardiac couples could suggest spousal behaviors that other patients had found helpful or could encourage the couple to identify specific things the wife could do to assist the patient with his self-care behaviors. As the patient's rating of the wife's helpful behaviors was moderately correlated with the patient's health-related communication score (r=.66), it is possible that attempts to increase communication about health-related issues could result in the wife doing more helpful things to a greater degree.

In summary, as the patient's adherence to self-care behaviors is a major goal to be accomplished and is the focus of the cardiac rehabilitation team, an assessment of the patient's marital relationship, his ability to communicate on health-related matters, and the couple's ability to work together on the patient's recovery, (the spouse's helpful behaviors) may assist the team in identifying patients who may be at risk for non-adherence or at lower levels of adherence. Steps can then be taken early in the course of the patient's recovery, to help the patient and his spouse develop the skills that will result in the optimal level of adherence, hopefully leading to the greatest degree of recovery possible.

Consistent with many other studies, the results of this study indicate that internality related to the patient's adherence and differentiated patients who were most adherent from those who were least adherent. As some research has indicated, cardiac rehabilitation programs which are flexible and able to design programs congruent with the patient's internality, relative to their own care and recovery, may be productive in achieving higher levels of adherence to self-care behaviors.

Often the focus in cardiac rehabilitation is on the patient. The spouse and other members of the family are not routinely included to a high degree in the rehabilitation program. As the results of this study clearly indicate that the most adherent patients and their spouses have higher levels of health-related communication, marital adjustment, and reported spousal helpful behaviors, it is important for the cardiac rehabilitation team to form a partnership not only

with the cardiac patient in working towards his optimal level of recovery but also his wife. The couple may have to be coached and supported to enhance their partnership before achieving the highest level of self-care for the patient.

The results of this study found that the wife's anger about her husband's heart attack is inversely related to the patient's adherence to self-care behaviors. While a patient's feelings of anger and the implications they may have on his adjustment and recovery are likely to be addressed in cardiac rehabilitation, the results of this study suggest that the wife's anger is be an issue which should also be assessed because of the relationship between the wife's anger and the patient's adherence to self-care behaviors.

Limitations of the Study

Various instruments used to assess study variables were adapted and developed for use in this study. As a result, while they may have face validity, their validity has not been well-established. In particular, this concern would apply to the Health-Related Communication scale, the Helpful Behaviors scale, the Heart Attack Locus of Control scale, and the Cardiac Adherence scale.

The selected variables were operationally defined to a large degree by the measures chosen to quantify the variables investigated. In particular, the Type A Self-Report Inventory may reflect an aspect of the Type A construct that is different from other measures of this construct.

Another bias was the selection of patients. The University of Alberta Hospitals cardiac rehabilitation program is not the only cardiac rehabilitation program in the city. The sample obtained was reflective only of the patients within this rehabilitation program. A random sample would have included patients from other rehabilitation programs as well as those working primarily with a family practitioner or not involved with either a rehabilitation program or a family doctor for cardiac care.

The sample obtained was a volunteer sample with all the biases inherent in one obtained in this way. For example, the

patients may have participated because they saw themselves as adherent and were comfortable in answering a questionnaire on their adherence. They might also have been in better health and had the energy and interest to participate in a study.

The sample might also reflect a higher number of cooperative couples who may be happier in their marriages, as the study required the cooperation of both the patient and his spouse. These factors may make the sample different from those who were asked to participate but did not.

A delineation of the study was that only male myocardial infarction patients were to be included in the study sample. This limited the generalizability of the results to male myocardial infarction patients and their spouses.

Suggestions for Further Research

Since this study has sampled couples from only one hospital in an urban center, future research could include patients from other cardiac rehabilitation programs in the city, and cardiac rehabilitation programs in rural areas, in order to increase generalizability. Inclusion of patients who have experienced a myocardial infarction, but are not presently receiving follow-up care and monitoring, would also present a more balanced picture of the cardiac patient and his adherence to self-care behaviors.

As women also experience myocardial infarction, a replication or similar study with a female sample would provide additional insight into the particular factors affecting female myocardial infarction patients' adherence to self-care behaviors.

As the findings of this study suggest that a good marital relationship, good health-related communication and supportive behaviors are consistent with higher levels of patient adherence to self-care behaviors, a program aimed at teaching these skills or increasing marital adjustment and a subsequent evaluation of the effectiveness would indicate if cardiac rehabilitation should also have a counselling component for noncompliant patients who have

identified deficits in marital satisfaction, health-related communication, and supportive spousal behaviors.

Several scales developed for use in this study (the Cardiac Patients Adherence Scale, the Health-Related Communication Scale, and the Spouse's Helpful Behaviors Scale) are promising and potentially useful in the area of cardiac rehabilitation. They need further refinement and validation. The present study was an initial attempt to empirically evaluate factors associated with adherence to self-care behaviors for male myocardial infarction patients.

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Appendix A
Questionnaires

Patient's Questionnaire
Wife's Questionnaire

HUSBAND'S QUESTIONNAIRE 1 _ _ _

Part 1

Please complete the following questions by circling your answer or writing your answer in the blanks provided.

1. Please write your age in the blank to the right. _____years

2. How many years of formal education do you have? (include public school and post secondary training) _____years

3. Have you had a heart attack? yes no

4. How many heart attacks have you experienced? _____

5. How long ago did you have your first heart attack? _____years _____months

6. How long ago did you have your most recent heart attack? _____years _____months

7. How often do you experience chest pain as a result of your heart condition?

   1. every hour of the day
   2. at least once a day
   3. at least once a week
   4. at least once a month
   5. very seldom
   6. never

8. If you do not experience chest pain, circle the (1) response. If you do experience chest pain, indicate how painful it **generally** is.

   1. never have chest pain
   2. a slight degree of pain
   3. moderate degree of pain
   4. severe degree of pain

9. I believe my present degree of heart damage is

   1. severe 2. moderate 3. mild 4. no damage

10. Have relatives on **your side** of the family died of heart disease? yes no

11. Have relatives on **your wife's** side of the family died of heart disease? yes no

12. Do you presently have children living at home? yes no

13. If yes, how many? _____

14. How long have you been living with your spouse? _____

15. Have you and your spouse made plans for your retirement? yes no

16. Has having a heart attack interfered with these plans? yes no

Part 2

Please indicate by **circling a number**, your level of agreement with each statement relative to how it describes your behavior. A **1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. Numbers in between indicate your relative level of agreement or disagreement. For example, a **4** would indicate that you are **almost neutral** in agreement although tending toward the agreement direction. If statement number 17 is **Not Applicable** to you, circle the **N/A.**

		Strongly Disagree					Strongly Agree	
17.	I use my medications as directed.	1	2	3	4	5	6	N/A
18.	I rest as frequently as I should for good heart care.	1	2	3	4	5	6	
19.	I do exercise activities appropriate for my heart care.	1	2	3	4	5	6	
20.	I exercise as frequently as required for my heart care.	1	2	3	4	5	6	
21.	I keep medical appointments related to my heart care.	1	2	3	4	5	6	
22.	I follow a heart healthy diet.	1	2	3	4	5	6	
23.	I physically over-exert myself.	1	2	3	4	5	6	
24.	I am at my recommended body weight.	1	2	3	4	5	6	
25.	If I have any questions about my cardiac care or recovery, I ask the doctor or cardiac nurse.	1	2	3	4	5	6	
26.	I have learned to manage stressful aspects of my life.	1	2	3	4	5	6	
27.	My heart attack has had a negative affect on my daily activities.	1	2	3	4	5	6	
28.	I am well informed about my heart condition.	1	2	3	4	5	6	
29.	My wife has been supportive of me during my recovery.	1	2	3	4	5	6	
30.	In spite of my heart attack(s), I expect that I will live a normal lifespan.	1	2	3	4	5	6	

31.	I believe that I will fully recover from my heart attack(s).	1	2	3	4	5	6	
32.	I believe that I will not have another heart attack.	1	2	3	4	5	6	
33.	I am very concerned about my health due to my heart attack(s).	1	2	3	4	5	6	
33a.	I feel that it's more important to keep my present lifestyle than to change and adopt a lifestyle that would be better for my health.	1	2	3	4	5	6	
34.	I am a non-smoker.	yes			no			
35.	On the average, I smoke the following number of cigarettes a week.	_____						

Part 3

Please indicate by circling a number, how well each statement describes **your wife's** behavior. A **1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. For example, a **3** would indicate that you are **almost neutral** in disagreement but tending toward the disagreement direction. If the behavior is inappropriate for your particular situation, i.e. Praises you for losing weight, and you don't have to lose weight, circle N/A for not applicable.

		Strongly Disagree					Strongly Agree	
36.	She prepares heart healthy meals.	1	2	3	4	5	6	N/A
37.	She eats the same meals that I do.	1	2	3	4	5	6	N/A
38.	She reminds me when I eat something that I shouldn't.	1	2	3	4	5	6	N/A
39.	She praises me for following my diet.	1	2	3	4	5	6	N/A
40.	She reminds me to take my medications when I forget.	1	2	3	4	5	6	N/A
41.	She reminds me to get a heart pill prescription refilled.	1	2	3	4	5	6	N/A
42.	She keeps the house quiet while I rest.	1	2	3	4	5	6	N/A
43.	She exercises with me, or goes with me when I exercise.	1	2	3	4	5	6	N/A

44.	She does not plan activities that interfere with my heart care.	1	2	3	4	5	6	N/A
45.	She encourages me to exercise regularly.	1	2	3	4	5	6	N/A
46.	She reminds me not to over-exert myself.	1	2	3	4	5	6	N/A
47.	She reminds me when I have a Doctor's appointment.	1	2	3	4	5	6	N/A
48.	She goes with me to my Doctor's appointments.	1	2	3	4	5	6	N/A
49.	She praises me for keeping my weight under control.	1	2	3	4	5	6	N/A
50.	She has dieted with me to lose weight as well.	1	2	3	4	5	6	N/A
51.	She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.	1	2	3	4	5	6	N/A
52.	She encourages me to stop smoking or smoke less.	1	2	3	4	5	6	N/A
53.	She does not smoke around me.	1	2	3	4	5	6	N/A
54.	She encourages me to reduce the stress in my life.	1	2	3	4	5	6	N/A
55.	She helps me to see the bright side of things.	1	2	3	4	5	6	N/A
56.	She handles as many irritations as she can herself, in order to avoid upsetting me.	1	2	3	4	5	6	N/A

Part 4

The following are statements on health beliefs. Please circle a number on the 6 point scale which shows how much you **Disagree** or **Agree** with each statement.

		Strongly Disagree					Strongly Agree
57.	If I take care of myself, I can reduce my chances of having another heart attack.	1	2	3	4	5	6
58.	Avoiding another heart attack is largely a matter of good fortune.	1	2	3	4	5	6
59.	The only way I can avoid having another heart attack is to have the government increasing the amount of heart research.	1	2	3	4	5	6

60.	No matter what I do, if I'm going to have another heart attack, I will.	1	2	3	4	5	6
61.	I feel that I have a great deal of control over whether or not I have another heart attack.	1	2	3	4	5	6
62.	The best way I can avoid another heart attack is by doing what my doctor tells me to do.	1	2	3	4	5	6
63.	If it's meant to be, I will have another heart attack.	1	2	3	4	5	6
64.	If I never have another heart attack, it's because I'm just plain lucky.	1	2	3	4	5	6
65.	The main thing which will determine if I have another heart attack is what I do for myself.	1	2	3	4	5	6
66.	If I have another heart attack, it will likely be because of something I should have done or not done.	1	2	3	4	5	6
67.	Having regular contact with my physician is the best way for me to avoid another heart attack.	1	2	3	4	5	6
68.	The Heart Association's work has a great deal to do with whether or not I have another heart attack.	1	2	3	4	5	6
69.	If it's God's will, I will have another heart attack.	1	2	3	4	5	6
70.	I know certain things I can do to reduce my chances of having another heart attack.	1	2	3	4	5	6
71.	There are so many causes of a heart attack, that sooner or later other causes are bound to affect me.	1	2	3	4	5	6
72.	Through constant effort, I can greatly reduce my chances of having another heart attack.	1	2	3	4	5	6
73.	I believe that because of individual susceptibility, there is very little I can do to avoid another heart attack.	1	2	3	4	5	6
74.	Future heart attacks are caused by things which I can personally control to reduce my risks.	1	2	3	4	5	6
75.	In our modern, fast paced society, I am bound to get another heart attack sooner or later.	1	2	3	4	5	6

76.	Health professionals control most of the factors which determine whether or not I have another heart attack.	1	2	3	4	5	6

Part 5

The following statements relate to the way in which you and your wife may communicate. Circle a number on the 6 point scale which shows how much you **Disagree** or **Agree** with each statement as it describes communication between you and your wife.

		Strongly Disagree					Strongly Agree
77.	My wife and I can openly discuss any aspect of my heart attack.	1	2	3	4	5	6
78.	I am not satisfied with the way in which my wife and I can discuss any problems resulting from my heart attack.	1	2	3	4	5	6
79.	I find it very helpful to discuss my health care with my wife.	1	2	3	4	5	6
80.	I can not confide my concerns about my heart attack to my wife.	1	2	3	4	5	6
81.	My wife shares her concerns about my heart attack with me.	1	2	3	4	5	6
82.	My wife and I agree on our interpretation of the Doctor's instructions for self-care following my heart attack.	1	2	3	4	5	6
83.	My wife encourages me to practice good self-care behaviors.	1	2	3	4	5	6
84.	I get angry when my wife reminds me about self-care behaviors.	1	2	3	4	5	6
85.	My wife and I discuss how I can accomplish the self-care behaviors important for my recovery following my heart attack.	1	2	3	4	5	6
86.	My wife and I discuss everything relative to managing my recovery from my heart attack and maintaining my health.	1	2	3	4	5	6
87.	My wife does not praise me for taking good care of myself.	1	2	3	4	5	6

88.	I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	1	2	3	4	5	6
89.	My heart attack is a topic that my wife and I do not discuss.	1	2	3	4	5	6

The Type A Self-Rating Inventory (TASRI) and the Dyadic Adjustment Scales are removed because of copyright restrictions. The original scales and their scoring systems were obtained from the following references:

Blumenthal, J.A., Herman, S., O'Toole, L.C., Haney, T. L., Williams, R. B., & Barefoot, J. C. (1985). Development of a brief self-report measure of the Type A (coronary prone) behavior pattern. Journal of Psychosomatic Research, 29(3), 265-274.

Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and the Family, 38, 15-36.

WIFE'S QUESTIONNAIRE 2__ __ __

Part 1

Please answer the following questions by circling your choice, or writing your response in the blanks.

1. Please write your age in the blank to the right. _____years
2. How many years of formal education do you have? _____years
   (include public school + post-secondary training).
3. How many years have you been living with your husband? _____years
4. How are you presently employed?
   1. full-time homemaker 2. part-time 3. full-time
5. Would you rate your present general health?
   1. excellent 2. good 3. fair 4. poor
6. I would rate my husband's present degree of heart damage as
   1. severe 2. moderate 3. mild 4. no damage
7. Have you and you husband made plans for his retirement? yes no
8. Has his heart attack interfered with these plans? yes no
9. Have any relatives on **your side** of the family died of heart disease? yes no
10. Have any relatives on **your husband's side** of the family died of heart disease? yes no

Part 2

Please indicate by **circling a number**, your level of agreement with each statement relative to how it describes your husband's behavior. A **1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. Numbers in between indicate your relative level of agreement or disagreement. For example, a **4** would indicate that you are **almost neutral** in agreement although tending to lean slightly in the agreement direction. If statement number 12 is **Not Applicable**, circle the **N/A.**

	Strongly Disagree					Strongly Agree	
11. My husband uses his medications as directed.	1	2	3	4	5	6	N/A
12. My husband rests as frequently as he should for his heart care.	1	2	3	4	5	6	
13. My husband does exercise activities appropriate for heart care.	1	2	3	4	5	6	

14.	My husband exercises as frequently as required for heart care.	1	2	3	4	5	6
15.	He keeps medical appointments related to his heart care.	1	2	3	4	5	6
16.	My husband follows a heart healthy diet.	1	2	3	4	5	6
17.	My husband physically over-exerts himself.	1	2	3	4	5	6
18.	My husband is at his recommended body weight.	1	2	3	4	5	6
19.	If my husband has any questions about his cardiac care or recovery, he asks the doctor or cardiac nurse.	1	2	3	4	5	6
20.	My husband has learned to manage the stress in his life.	1	2	3	4	5	6
21.	His heart attack has adversely affected his daily activities.	1	2	3	4	5	6
22.	My husband is well informed about his heart condition.	1	2	3	4	5	6
23.	I have been supportive of my husband during his recovery.	1	2	3	4	5	6
24.	In spite of his heart attack(s), I expect that my husband will live his normal lifespan.	1	2	3	4	5	6
25.	I believe that he will fully recover from his heart attack(s).	1	2	3	4	5	6
26.	I believe that my husband will not have another heart attack.	1	2	3	4	5	6
27.	I feel very angry that my husband has had a heart attack.	1	2	3	4	5	6
28.	I feel angry that my husband didn't care for himself which may have contributed to the occurrence of his heart attack.	1	2	3	4	5	6
29.	I feel very angry about the changes that have occurred in my life as a result of my husband's heart attack.	1	2	3	4	5	6
30.	I am very concerned about my husband's health due to his heart attack(s).	1	2	3	4	5	6

30a. I feel that it is more important for my husband to keep his present lifestyle than to change and adopt a lifestyle that would be better for his health. 1 2 3 4 5 6

31. My husband is a non-smoker. Yes No

32. On the average, he smokes the following number of cigarettes a week. _____

Part 3

Please indicate how well each of the following statement describes your behavior. For example, a **1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. A **4** would indicate that you are **almost neutral** in agreement but tending toward agreement. If the behavior does not apply to your particular situation, i.e. I praise your husband for losing weight and he doesn't have to lose weight, circle **N/A** for not applicable.

	Strongly Disagree					Strongly Agree	
33. I prepare heart healthy meals.	1	2	3	4	5	6	N/A
34. I eat the same meals that he does.	1	2	3	4	5	6	N/A
35. I remind him when he eats something that he shouldn't.	1	2	3	4	5	6	N/A
36. I praise him for following his diet.	1	2	3	4	5	6	N/A
37. I remind him to take his medications when he forgets.	1	2	3	4	5	6	N/A
38. I remind him to get his heart pill prescription(s) refilled.	1	2	3	4	5	6	N/A
39. I keep the house quiet while he rests during the day.	1	2	3	4	5	6	N/A
40. I join him when he exercises.	1	2	3	4	5	6	N/A
41. I plan activities so they don't interfere with his heart care.	1	2	3	4	5	6	N/A
42. I encourage him to exercise regularly.	1	2	3	4	5	6	N/A
43. I remind him not to over-exert himself.	1	2	3	4	5	6	N/A
44. I remind him when he has a Doctor's appointment.	1	2	3	4	5	6	N/A

45.	I go with him to his Doctor's appointments.	1	2	3	4	5	6	N/A
46.	I praise him for keeping his weight under control.	1	2	3	4	5	6	N/A
47.	I diet with him in order to help him lose weight.	1	2	3	4	5	6	N/A
48.	I encourage him to ask the doctor or nurse any questions about his heart care.	1	2	3	4	5	6	N/A
49.	I encourage him to stop smoking or smoke less.	1	2	3	4	5	6	N/A
50.	I don't smoke around him.	1	2	3	4	5	6	N/A
51.	I encourage him to reduce the stress in his life.	1	2	3	4	5	6	N/A
52.	I help him see the bright side of things.	1	2	3	4	5	6	N/A
53.	I handle as many irritations as I can myself, in order to avoid upsetting my husband.	1	2	3	4	5	6	N/A

Part 4

The following are statements on health beliefs relative to your husband's health. Circle a number on the 6 point scale which shows how much you **Disagree** or **Agree** with each statement.

		Strongly Disagree					Strongly Agree
54.	If he takes care of himself, he can reduce his chances of having another heart attack.	1	2	3	4	5	6
55.	His avoiding a further heart attack is largely a matter good fortune.	1	2	3	4	5	6
56.	The only way he can avoid having another heart attack is by the government increasing the amount of heart disease research.	1	2	3	4	5	6
57.	No matter what he does, if he is going to have another heart attack, he will.	1	2	3	4	5	6
58.	I feel that he has a great deal of control over whether or not he has another heart attack.	1	2	3	4	5	6
59.	The best way he can avoid another heart attack is by doing what his doctor tells him to do.	1	2	3	4	5	6

60.	If it's meant to be, he will have another heart attack.	1	2	3	4	5	6
61.	If he never has another heart attack, it's because he is just plain lucky.	1	2	3	4	5	6
62.	The main thing which will determine if he has another heart attack is what he does for himself.	1	2	3	4	5	6
63.	If he has another heart attack, it will likely be because of something he should have done, or not done.	1	2	3	4	5	6
64.	Having regular contact with his physician is the best way for him to avoid another heart attack.	1	2	3	4	5	6
65.	The Heart Association's work has a great deal to do with whether or not he has another heart attack.	1	2	3	4	5	6
66.	If it's God's will, he will have another heart attack.	1	2	3	4	5	6
67.	He knows certain things he can do to reduce his chances of having another heart attack.	1	2	3	4	5	6
68.	There are so many causes of heart attacks, that sooner or later one of them is bound to affect him.	1	2	3	4	5	6
69.	Through constant effort, he can greatly reduce his chances of having another heart attack.	1	2	3	4	5	6
70.	I believe that because of individual susceptibility there is very little he can do to avoid another heart attack.	1	2	3	4	5	6
71.	Heart attacks are caused by things which he can personally control to reduce his risks.	1	2	3	4	5	6
72.	In our modern, fast paced society, he is bound to get another heart attack sooner or later.	1	2	3	4	5	6
73.	Health professionals control most of the factors which determine whether or not he has another heart attack.	1	2	3	4	5	6

Part 5

The following statements relate to the way in which you and your husband may communicate. Circle a number on the 6 point scale which shows how much you **Disagree** or **Agree** with each statement as it describes communication between you and your husband.

		Strongly Disagree					Strongly Agree
74.	My husband and I can openly discuss any aspect of his heart attack.	1	2	3	4	5	6
75.	I am not satisfied with the way in which my husband and I can discuss any problems resulting from his heart attack.	1	2	3	4	5	6
76.	I find it very helpful to be able to discuss my husband's health care with him.	1	2	3	4	5	6
77.	I feel that I can not confide my fears and concerns about his heart attack to my husband.	1	2	3	4	5	6
78.	My husband shares his fears and concerns about his heart attack with me.	1	2	3	4	5	6
79.	My husband and I agree on our interpretation of the Doctor's instructions for self-care following his heart attack.	1	2	3	4	5	6
80.	I encourage my husband to practice good self-care behaviors.	1	2	3	4	5	6
81.	My husband gets angry if I remind him about self-care behaviors.	1	2	3	4	5	6
82.	My husband and I discuss how he can accomplish the self-care behaviors important for his recovery following his heart attack.	1	2	3	4	5	6
83.	My husband and I discuss everything relative to managing his recovery from his heart attack and maintaining his health.	1	2	3	4	5	6
84.	I do not praise my husband for taking good care of himself.	1	2	3	4	5	6
85.	My husband expresses appreciation for my encouragement and help relative to his efforts to maintain his health.	1	2	3	4	5	6
86.	My husband's heart attack is a topic that we do not discuss.	1	2	3	4	5	6

The Type A Self-Rating Inventory (TASRI) and the Dyadic Adjustment Scales are removed because of copyright restrictions. The original scales and their scoring systems were obtained from the following references:

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Spanier, G. B. (1976). Measuring dyadic adjustment: New scales for assessing the quality of marriage and similar dyads. Journal of Marriage and the Family, 38, 15-36.

Appendix B
Form Letters

Cover Letter to Patient
Cover Letter to Wife

Dear **HUSBAND**,

We are conducting a research project through the Cardiac Rehabilitation Program at the University of Alberta Hospital. The purpose of the study is to investigate how certain beliefs, behaviors and characteristics of M.I. patients and their wives influence self-care behaviors of the patient in the area of diet, exercise, medication and smoking, etc., following a heart attack. The knowledge that comes from research such as this will enable Cardiac Rehabilitation personnel to be more helpful to both M.I. patients and their wives during the patients' recovery and maintenance of his health after suffering a heart attack.

We want to emphasize that participation in this research is **entirely voluntary**. For the purpose of this research project, it is necessary that the M.I. patient and his wife volunteer as a couple. Both questionnaires are similar in content and will take about 30 minutes to complete. Please read the following before you begin.

1. Fill out the **appropriate** (husband or wife) **questionnaire**. After completing it, return it to the smaller envelope and seal it. Return both by mail in the large prepaid envelope.
2. Do not put your name on the questionnaire in order to assure **confidentiality**.
3. Please complete your questionnaires **independently.**
4. Please complete and return the questionnaires **preferably within a week**.

If you have any questions regarding the study or the questionnaire, please call Dr. Peter Calder at 492-3696. It is assumed when you complete and return the questionnaires, that you are giving consent to use the information provided. Thank-you for your cooperation in helping us learn how we can be of greater assistance to M.I. patients and their wives.

Yours truly,

Dr. C. T. Kappagoda,
FRCP(Lond), FRCP(C), PhD
Director of Cardiac Rehab.

Dear **Wife**,

We are conducting a research project through the Cardiac Rehabilitation Program at the University of Alberta Hospital. The purpose of the study is to investigate how certain beliefs, behaviors and characteristics of M.I. patients and their wives influence self-care behaviors of the patient in the area of diet, exercise, medication and smoking, etc., following a heart attack. The knowledge that comes from research such as this will enable Cardiac Rehabilitation personnel to be more helpful to both M.I. patients and their wives during the patients' recovery and maintenance of his health after suffering a heart attack.

We want to emphasize that participation in this research is **entirely voluntary**. For the purpose of this research project, it is necessary that the M.I. patient and his wife volunteer as a couple. Both questionnaires are similar in content and will take about 30 minutes to complete. Please read the following before you begin.

1. Fill out the **appropriate** (husband or wife) **questionnaire**. After completing it, return it to the smaller envelope and seal it. Return both by mail in the large prepaid envelope.
2. Do not put your name on the questionnaire in order to assure **confidentiality**.
3. Please complete your questionnaires **independently**.
4. Please complete and return the questionnaires **preferably within a week**.

If you have any questions regarding the study or the questionnaire, please call Dr. Peter Calder at 492-3696. It is assumed when you complete and return the questionnaires, that you are giving consent to use the information provided. Thank-you for your cooperation in helping us learn how we can be of greater assistance to M.I. patients and their wives.

Yours truly,

Dr. C. T. Kappagoda,
FRCP(Lond), FRCP(C), PhD
Director of Cardiac Rehab.

Appendix C
Frequencies, Means and Standard Deviations
for Independent/Dependent Variables

Demographic Information
Adherence Scale
Spouses Helpful Behaviors Scale
Health Related Communication Scale

HUSBAND'S QUESTIONNAIRE 1 _ _ _

*=sig t-test

Part 1

Please complete the following questions by circling your answer or writing your answer in the blanks provided.

1.	Please write your age in the blank to the right.	H: 34 to 75 W: 30 to 76	X=57 yr X=54 yr
2.	How many years of formal education do you have? (include public school and post secondary training)	H: 5 to 24 W: 5 to 23	X=12 X=12
3.	Have you had a heart attack?	yes=126	no=0
4.	How many heart attacks have you experienced?	1=77=61% 2=34=27% 3=8=6%	4=4=3% 5=2=2% 0=1=1%

5. How long ago did you have your first heart attack? X=5.5 years
6. How long ago did you have your most recent heart attack? X=3.0 years
7. How often do you experience chest pain as a result of your heart condition?

1. every hour of the day	2=2%	4. at least once a month	4=3%
2. at least once a day	12=9%	5. very seldom	55=44%
3. at least once a week	16=13%	6. never	37=29%

8. If you do not experience chest pain, circle the (1) response. If you do experience chest pain, indicate how painful it **generally** is.

1. never have chest pain	40=32%	3. moderate degree of pain	27=21%
2. a slight degree of pain	52=41%	4. severe degree of pain	3=2%
missing data	4=3%		

9. I believe my present degree of heart damage is

H:	15=12%	45=36%	52=41%	11=9%	M 2=2%
	1. severe	2. moderate	3. mild	4. no damage	*
W:	22=17%	64=51%	32=25%	7=6%	M 1=1%

10.	Have relatives on **your side** of the family died of heart disease?	H: 83=66% yes	42=33% no	M 1=1%
		W:91=72%	32=25%	M 3=2%
11.	Have relatives on **your wife's** side of the family died of heart disease?	H: 68=54% yes	51=40% no	M 7=6%
		W:76=60%	49=39%	M 1=1%

		yes	no
12.	Do you presently have children living at home?	51=40%	75=60%

13. If yes, how many? 1=23=18% 2=22=17% 3=5=4% 4=1=1%

14.	How long have you been living with your spouse?	H: 2 to 49 W:2 to 49	X=30 yr X=30 yr	
15.	Have you and your spouse made plans for your retirement?	H: 69=55% yes W:64=51%	51=40% no 57=45%	M 6=5% M 5=4%
16.	Has having a heart attack interfered with these plans?	H: 34=27% yes W:34=27%	83=66% no 84=67%	M 9=7% M 8=6%

Wives Only

4. How are you presently employed?
   1. full-time homemaker=48% 2. part-time=14% 3. full-time=38%

5. Would you rate your present general health?
   1. excellent=20% 2. good=59% 3. fair=19% 4. poor=2%

Part 2-Adherence Scale

Please indicate by **circling a number**, your level of agreement with each statement relative to how it describes your behavior. A **1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. Numbers in between indicate your relative level of agreement or disagreement. For example, a **4** would indicate that you are **almost neutral** in agreement although tending toward the agreement direction. If statement number 17 is **Not Applicable** to you, circle the **N/A.**

		Strongly Disagree					Strongly Agree		Mean (S.D.)
		H% 0	1	0	2	8	81	8	5.8 (0.6)
17.	I use my medications as directed.	1	2	3	4	5	6	N/A	
		W% 0	0	1	2	9	83	5	5.8 (0.5)
		H% 1	4	7	28	33	27		4.7 (1.1)
18.	I rest as frequently as I should for good cardiac care.	1	2	3	4	5	6		
		W% 2	5	15	14	22	42		4.8 (1.4)
		H% 2	3	5	16	32	37		5.0 (1.1)
19.	I do exercise activities appropriate for my heart care.	1	2	3	4	5	6		
		W% 4	7	8	11	24	46		4.8 (1.5)
		H% 2	3	6	20	32	36		4.9 (1.2)
20.	I exercise as frequently as required for my heart care.	1	2	3	4	5	6		
		W% 3	9	10	12	22	44		4.7 (1.5)
		H% 0	0	0	2	5	92		5.9 (0.4)
21.	I keep medical appointments related to my heart care.	1	2	3	4	5	6		
		W% 1	0	0	2	6	92		5.9 (0.6)

		H%	1	2	4	16	51	27	5.0	(0.9)
22.	I follow a heart healthy diet.		1	2	3	4	5	6		
		W%	2	3	7	22	34	33	4.8	(1.2)
		H%	21	21	15	28	13	2	3.0	(1.4)
23.	I physically over-exert myself.		1	2	3	4	5	6		
		W%	22	16	10	29	14	8	3.2	(1.6)
		H%	9	10	19	19	19	24	4.0	(1.6)
24.	I am at my recommended body		1	2	3	4	5	6		
	weight.	W%	16	10	12	15	16	31	4.0	(1.8)
		H%	1	1	0	7	32	59	5.5	(0.8)
25.	If I have any questions about my cardiac care or recovery, I ask the		1	2	3	4	5	6		
	doctor or cardiac nurse.	W%	4	2	5	8	14	66	5.3	(1.3)
		H%	2	6	13	35	32	13	4.3	(1.1)
26.	I have learned to manage		1	2	3	4	5	6		*
	stressful aspects of my life.	W%	7	9	14	35	17	17	4.0	(1.4)
		H%	15	13	12	17	25	18	4.3	(1.1)
27.	My heart attack has had a negative		1	2	3	4	5	6		*
	affect on my daily activities.	W%	18	8	11	18	22	22	4.0	(1.4)
		H%	0	4	6	12	29	50	5.1	(1.1)
28.	I am well informed about my		1	2	3	4	5	6		
	heart condition.	W%	2	2	5	6	25	60	5.3	(1.1)
		H%	0	0	1	3	13	83	5.9	(0.5)
29.	My wife has been supportive of		1	2	3	4	5	6		*
	me during my recovery.	W%	2	2	0	2	17	77	5.6	(0.9)
		H%	1	6	6	20	24	43	4.9	(1.3)
30.	In spite of my heart attack(s), I expect that I will live a normal		1	2	3	4	5	6		
	lifespan.	W%	6	2	6	20	29	37	4.7	(1.4)
		H%	8	4	9	26	23	31	4.4	(1.5)
31.	I believe I will fully recover from		1	2	3	4	5	6		
	my heart attack.	W%	10	3	8	22	22	34	4.4	(1.6)
		H%	8	12	17	33	17	14	3.8	(1.4)
32.	I believe that I will not have		1	2	3	4	5	6		
	another heart attack.	W%	11	12	15	38	16	9	3.6	(1.4)
		H%	7	10	10	11	25	37	4.5	(1.6)
33.	I am very concerned about my		1	2	3	4	5	6		
	health due to my heart attack(s).	W%	3	4	2	14	19	57	5.1	(1.3)
		H%	37	22	5	13	13	10	2.7	(1.8)
33a.	I feel that it's more important to keep my present life-style than to		1	2	3	4	5	6		
	change and adopt a healthier lifestyle.	W%	47	14	6	9	4	10	2.7	(2.0)

34.	I am a non-smoker.	H%			83		17			
					yes		no			
		W%			79		21			
35.	On the average, I smoke the following number of cigarettes a week.	H=14% of the sample smoked.								85 (55.9)
		W=13% of the sample smoked.								85 (49.8)

Wives Only

27.	I feel very angry that my husband has had a heart attack.		1	2	3	4	5	6		
		W%	40	11	8	15	10	15		2.9 (1.9)
28.	I feel angry that my husband didn't care for himself which may have contributed to the occurrence of his heart attack.		1	2	3	4	5	6		
		W%	42	14	3	21	11	10		2.8 (1.8)
29.	I feel very angry about the changes that have occurred in my life as a result of my husband's heart attack.		1	2	3	4	5	6		
		W%	39	12	10	15	13	10		2.8 (1.8)

Part 3- Spouses Helpful Behaviors

Please indicate by circling a number, how well each statement describes **your wife's** behavior. **A 1** indicates a **Strong Disagreement** with the statement, while a **6** indicates a **Strong Agreement**. For example, a **3** would indicate that you are **almost neutral** in disagreement but tending toward the disagreement direction. If the behavior is inappropriate for your particular situation, i.e. Praises you for losing weight, and you don't have to lose weight, circle N/A for not applicable.

			Strongly Disagree					Strongly Agree		Mean (S.D.)
36.	She prepares heart healthy meals.	H%	0	0	4	10	37	48	0	5.3(0.8)
			1	2	3	4	5	6	N/A	
		W%	0	1	4	13	36	47	0	5.2(0.9)
37.	She eats the same meals that I do.	H%	2	2	6	10	21	60	0	5.3(1.1)
			1	2	3	4	5	6	N/A	
		W%	0	1	3	12	23	61	0	5.4(0.9)
38.	She reminds me when I eat something that I shouldn't.	H%	0	2	5	9	30	54	0	5.3(0.9)
			1	2	3	4	5	6	N/A	
		W%	7	5	2	17	22	48	0	4.9(1.4)

		H%	2	3	10	17	21	38	7	4.8(1.3)
			1	2	3	4	5	6	N/A	
39.	She praises me for following my diet.	W%	5	2	6	22	27	33	6	4.7(1.3)
		H%	6	4	9	6	13	52	11	4.9(1.6)
			1	2	3	4	5	6	N/A	
40.	She reminds me to take my medications when I forget.	W%	6	1	1	9	13	58	13	5.3(1.4)
		H%	10	3	4	15	9	43	15	4.6(1.8)
			1	2	3	4	5	6	N/A	
41.	She reminds me to get a heart pill prescription refilled.	W%	14	3	2	8	9	40	23	4.5(2.0)
		H%	3	2	5	13	25	43	9	5.0(1.3)
			1	2	3	4	5	6	N/A	
42.	She keeps the house quiet while I rest.	W%	3	1	2	10	20	44	21	5.2(1.2)
		H%	21	9	11	17	18	19	4	3.6(1.8)
			1	2	3	4	5	6	N/A	
43.	She exercises with me, or goes with me when I exercise.	W%	21	9	11	17	18	19	4	3.6(1.8)
		H%	1	0	6	13	25	52	3	5.2(1.0)
			1	2	3	4	5	6	N/A	
44.	She does not plan activities that interfere with my heart care.	W%	2	1	1	11	27	38	16	5.1(1.1)
		H%	2	2	7	15	25	46	2	5.0(1.2)
			1	2	3	4	5	6	N/A	
45.	She encourages me to exercise regularly.	W%	6	1	1	19	20	45	7	5.0(1.4)
		H%	2	1	5	7	28	57	1	5.3(1.0)
			1	2	3	4	5	6	N/A	
46.	She reminds me not to over-exert myself.	W%	3	2	2	9	23	59	2	5.3(1.2)
		H%	3	3	6	9	16	60	2	5.2(1.3)
			1	2	3	4	5	6	N/A	
47.	She reminds me when I have a Doctor's appointment.	W%	11	1	2	11	10	55	9	4.9(1.7)
		H%	17	12	11	17	11	27	5	3.8(1.9)
			1	2	3	4	5	6	N/A	
48.	She goes with me to my Doctor's appointment.	W%	25	4	6	15	14	25	11	3.8(2.0)
		H%	6	5	10	25	23	22	9	4.3(1.4)
			1	2	3	4	5	6	N/A	
49.	She praises me for keeping my weight under control.	W%	6	3	5	26	16	29	14	4.5(1.5)
		H%	19	9	5	12	17	22	16	3.8(1.9)
			1	2	3	4	5	6	N/A	*
50.	She has dieted with me to lose weight as well.	W%	13	2	3	18	13	29	21	4.3(1.8)
		H%	3	4	5	4	19	63	2	5.3(1.3)
			1	2	3	4	5	6	N/A	*
51.	She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.	W%	2	2	1	6	10	77	2	5.5(1.1)

		H%	0	1	1	3	5	25	65	5.5(0.9)
			1	2	3	4	5	6	N/A	
52.	She encourages me to stop smoking or smoke less.	W%	1	1	1	1	1	21	73	5.3(1.4)
		H%	14	1	5	3	2	23	52	4.0(2.2)
			1	2	3	4	5	6	N/A	
53.	She does not smoke around me.	W%	13	1	2	5	2	12	64	3.5(2.2)
		H%	1	2	5	18	25	47	2	5.1(1.1)
			1	2	3	4	5	6	N/A	
54.	She encourages me to reduce the stress in my life.	W%	2	2	1	11	17	61	6	5.4(1.1)
		H%	2	3	7	13	27	47	1	5.0(1.2)
			1	2	3	4	5	6	N/A	
55.	She helps me to see the bright side of things.	W%	1	2	2	13	24	58	1	5.3(1.0)
		H%	1	4	9	22	27	37	0	4.8(1.2)
			1	2	3	4	5	6	N/A	
56.	She handles as many irritations as she can herself, to avoid upsetting me.	W%	2	2	2	15	21	54	3	5.2(1.1)

Part 5 - Health Related Communication Scale

The following statements relate to the way in which you and your wife may communicate. Circle a number on the 6 point scale which shows how much you **Disagree** or **Agree** with each statement as it describes communication between you and your wife.

			Strongly Disagree					Strongly Agree	Mean (S.D.)
		H%	1	0	2	4	23	71	5.6 (0.8)
			1	2	3	4	5	6	
77.	My wife and I can openly discuss any aspect of my heart attack.	W%	1	2	4	7	11	75	5.5 (1.0)
		H%	60	12	9	8	5	6	2.0 (1.5)
			1	2	3	4	5	6	
78.	I'm not satisfied with the way in which my wife and I can discuss problems resulting from my heart attach.	W%	62	12	3	10	6	7	2.1 (1.7)
		H%	2	1	2	14	33	47	5.2 (1.1)
			1	2	3	4	5	6	
79.	I find it very helpful to discuss my health care with my wife.	W%	0	0	3	12	16	69	5.5 (0.8)
		H%	55	14	5	9	9	8	2.3 (1.7)
			1	2	3	4	5	6	
80.	I can not confide my concerns about my heart attack to my wife.	W%	39	14	5	14	13	16	3.0 (2.0)
		H%	2	2	6	8	25	58	5.5 (1.1)
			1	2	3	4	5	6	
81	My wife shares her concerns about my heart attack with me.	W%	5	9	5	15	31	35	4.6 (1.5)

82. My wife and I agree on our interpretation of the Doctor's instructions for self-care following my heart attack.	H%	1	2	2	9	28	58	5.4	(1.0)
		1	2	3	4	5	6		
	W%	2	1	3	10	20	64	5.4	(1.0)
83. My wife encourages me to practice good self-care behaviors.	H%	1	1	3	6	26	63	5.4	(.9)
		1	2	3	4	5	6		
	W%	1	1	1	6	25	67	5.5	(0.8)
84. I get angry when my wife reminds me about self-care behaviors.	H%	34	29	6	19	9	3	2.5	(1.5)
		1	2	3	4	5	6		*
	W%	37	11	9	17	13	14	3.0	(1.9)
85. My wife and I discuss how I can accomplish self-care behaviors important for recovery after my M.I.	H%	1	3	5	20	30	41	5.0	(1.1)
		1	2	3	4	5	6		
	W%	3	2	3	19	25	47	5.0	(1.2)
86. My wife and I discuss everything related to managing my recovery from my M.I. and maintaining my health.	H%	2	3	2	16	37	40	5.0	(1.1)
		1	2	3	4	5	6		
	W%	4	3	2	16	22	52	5.1	(1.3)
87. My wife does not praise me for taking good care of myself.	H%	39	23	12	15	6	4	2.4	(1.5)
		1	2	3	4	5	6		
	W%	45	18	9	16	8	4	2.3	(1.6)
88. I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	H%	2	4	10	22	27	35	4.7	(1.2)
		1	2	3	4	5	6		*
	W%	8	8	6	29	21	28	4.3	(1.5)
89. My heart attack is a topic that my wife and I do not discuss.	H%	71	11	7	4	4	3	1.7	(1.3)
		1	2	3	4	5	6		
	W%	65	14	3	8	5	5	1.9	(1.5)

Appendix D
Significant ANOVAs

Independent Variables by Top 25% and Bottom 25%
of Patient's Adherence Score

Means and Standard Deviations of Most Adherent and Adherent

PATIENT ITEMS	Most Adherent	Least Adherent	Probability
Patients' Age	61.3(9.7)	54.0(9.5)	.00
Length of time living with wife.	33.8(10)	27.7(11.7)	.04
I am well informed about my heart condition.	5.6(.8)	4.8(1.3)	.01
My wife has been supportive of me during my recovery.	6.0(.2)	5.5(.8)	.01
I feel it is more important to keep my present lifestyle than to change and adopt a lifestyle that would be better for my health.	2.2(1.6)	3.3(1.7)	.02
I use my medications as directed.	6.0(.0)	5.6(.6)	.00
I rest as frequently as I should for good heart care.	5.2(1.0)	4.1(1.1)	.00
I do exercise activities appropriate for my heart care.	5.7(.5)	3.8(1.3)	.00
I exercise as frequently as required for my heart care.	5.6(.6)	3.7(1.3)	.00
I follow a heart healthy diet.	5.5(.5)	4.3(1.1)	.00
I physically over-exert myself.	5.0(1.2)	3.5(1.4)	.00
I am at my recommended body weight.	5.1(1.2)	3.1(1.6)	.00
If I have any questions about my cardiac care or recovery, I ask the doctor or cardiac nurse.	5.7(.5)	5.1(1.2)	.00
I have learned to manage stressful aspects of my life.	4.7(1.1)	3.9(1.3)	.01
She prepares heart healthy meals.	5.9(.3)	4.7(1)	.00
She reminds me when I eat something I shouldn't.	5.8(.4)	5.2(.8)	.00
She praises me for following my diet.	5.5(.8)	4.2(1.5)	.00
She reminds me to take my medications when I forget.	5.3(1.5)	4.2(1.7)	.04
She keeps the house quiet when I rest.	5.5(.9)	4.6(1.6)	.04
She exercises with me or goes with me when I exercise.	4.3(1.7)	2.6(1.6)	.00
She does not plan activities that interfere with my heart care.	5.6(.7)	4.8(1.2)	.00
She encourages me to exercise regularly.	5.5(.8)	4.4(1.3)	.00
She reminds me not to over-exert myself.	5.7(.6)	4.7(1.5)	.00
She goes with me to my Doctor's appointments.	4.3(1.9)	3.3(2)	.04
She has dieted with me to lose weight as well.	4.7(1.9)	3.1(1.9)	.01
She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.	5.7(.5)	4.8(1.7)	.01
She helps me see the bright side of things.	5.4(.8)	4.8(1.2)	.02
She handles as many irritations as she can herself, to avoid upsetting me.	5.1(.9)	4.5(1.3)	.04
My wife and I can openly discuss any aspect of my heart attack.	5.9(.4)	5.2(.8)	.00

I find it very helpful to discuss my health care with my wife.	5.7(.5)	4.5(1.1)	.00
My wife shares her concerns about my heart attack with me.	5.6(.6)	4.9(1.2)	.01
My wife and I agree on our interpretation of the Doctor's instructions for self-care following my heart attack.	5.7(.4)	4.9(1.3)	.00
My wife encourages me to practice good self-care behaviors.	5.7(1)	5.0(1.1)	.01
My wife and I discuss how I can accomplish self-care behaviors important for my recovery following my heart attack.	5.7(.5)	4.3(1)	.00
My wife and I discuss everything relative to managing my recovery from my heart attack and maintaining my health.	5.6(.5)	4.5(1.1)	.00
I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.	5.3(.9)	4.5(1.2)	.01
My heart attack is a topic that my wife and I don't discuss.	5.6(1.2)	4.7(1.6)	.01
WIFE'S VARIABLES			
Length of time living with patient.	33.8(10)	27.6(12)	.04
I feel angry that my husband did not care for himself, which may have contributed to the occurrence of his heart attack.	1.6(1.3)	2.8(1.9)	.01
I feel very angry about the changes that have occurred in my life as a result of my husband's heart attack.	1.9(1.5)	3.1(1.8)	.01
My husband uses his medications as directed.	6.0(0)	5.7(.7)	.01
My husband rests as frequently as he should for good heart care.	5.6(.9)	3.6(1.5)	.00
My husband does exercise activities appropriate for heart care.	5.9(.4)	3.4(1.6)	.00
My husband exercises as frequently as required for heart care.	5.8(.5)	3.2(1.4)	.00
He keeps medical appointments related to his heart care.	6.0(.0)	5.6(1)	.04
My husband follows a heart healthy diet.	5.8(.5)	3.7(1.2)	.00
My husband physically over-exerts himself.	4.8(1.3)	3.1(1.4)	.00
My husband is at his recommended body weight.	5.2(1.3)	2.7(1.7)	.00
If my husband has any questions about his cardiac care or recovery, he asks the doctor or cardiac nurse.	5.9(.4)	4.2(1.8)	.00
My husband has learned to manage the stress in his life.	4.9(1.1)	2.8(1.3)	.00
My husband is well informed about his heart condition.	5.9(.5)	4.6(1.5)	.00
I have been supportive of my husband during his recovery.	6.0(.0)	5.0(1.5)	.00

In spite of his heart attack, I expect that my husband will live his normal lifespan.	5.3(9)	4.1(1.7)	.00
I believe he will fully recover from his heart attack.	5.2(1)	3.8(1.8)	.00
I believe that my husband will not have another heart attack.	4.2(1.4)	3.0(1.6)	.00
I praise him for following his diet.	5.0(1.5)	4.2(1.3)	.04
I remind him to take his medications when he forgets.	5.7(.8)	4.7(1.7)	.02
I keep the house quiet when he rests during the day.	5.7(.6)	4.6(1.7)	.02
I join him when he exercises.	4.8(1.4)	2.6(1.5)	.00
I go with him to his doctor's appointments.	4.8(1.9)	3.3(2)	.01
I praise him for keeping his weight under control.	5.1(1.3)	4.2(1.7)	.04
I diet with him in order to help him lose weight.	4.9(1.7)	3.6(1.9)	.02
I encourage him to ask the doctor or nurse any questions about his heart care.	5.8(.5)	5.1(1.5)	.02
I don't smoke around him.	4.6(2.2)	2.2(1.8)	.02
My husband and I can openly discuss any aspect of his heart attack.	5.8(.8)	5.0(1.4)	.01
I find it very helpful to be able to discuss my husband's health care with him.	5.7(.7)	5.2(1)	.02
My husband shares his concerns about his heart attack with me.	5.1(1.1)	4.3(1.6)	.03
My husband and I agree on our interpretation of the Doctor's instructions for self-care following his heart attack.	5.8(.4)	4.8(1.5)	.00
I encourage my husband to practice good self-care behaviors.	5.9(.3)	5.3(1.1)	.01
My husband gets angry if I remind him about self-care behaviors.	4.8(1.7)	3.0(1.8)	.00
My husband and I discuss how he can accomplish the self-care behaviors important for his recovery following his heart attack.	5.6(.7)	4.3(1.5)	.00
My husband and I discuss everything relative to managing his recovery from his heart attack and maintaining his health.	5.7(.6)	4.1(1.7)	.00
My husband expresses appreciation for my encouragement and help relative to his efforts to regain and maintain his health.	4.9(1.2)	3.5(1.6)	.00
My husband's heart attack is a topic that we do not discuss.	5.6(1)	4.6(1.6)	.02
SCALE VARIABLES			
Patient's Internal Locus of Control	37.5(4.2)	34.8(4.4)	.02
Patient's Marital Satisfaction	117.9(9.6)	100.7(18.8)	.00
Wife's Marital Satisfaction	114.2(26.0)	99.9(21.6)	.03
Patient's Health Related Communication	69.4(6.9)	56.7(12.4)	.00
Wife's Health Related Communication	70.5(5.1)	60.1(9.0)	.00

ANOVAs: Most Adherent and Least Adherent Patients and Their Spouses

PATIENT VARIABLES

Patients' age.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	778.3545	8.4248	.01
Within Groups	57	5266.1539		
Total	58	6044.5085		

Length of time living with spouse.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	544.2029	4.4991	.04
Within Groups	57	6894.5428		
Total	58	74438.7458		

I am well informed about my heart condition.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	8.7798	7.3449	.01
Within Groups	57	68.1354		
Total	58	76.9153		

My wife has been supportive of me during my recovery.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	3.4835	8.5074	.01
Within Groups	56	22.9303		
Total	57	26.4138		

I feel it is more important to keep my present lifestyle than to change and adopt a lifestyle that would be better for my health.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	16.4635	5.9460	.02
Within Groups	56	155.0538		
Total	57	171.5172		

I use my medications as directed.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	1.8462	8.7273	.00
Within Groups	48	10.1538		
Total	49	12.0000		

I rest as frequently as I should for good heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	18.6485	15.7744	.00
Within Groups	57	67.3854		
Total	58	86.0339		

I do exercise activities appropriate for my heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	52.0567	49.8956	.00
Within Groups	57	59.4687		
Total	58	111.5254		

I exercise as frequently as required for my heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	57.0273	49.6154	.00
Within Groups	57	65.5150		
Total	58	122.5424		

I follow a heart healthy diet.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	23.5643	28.7365	.00
Within Groups	57	46.7407		
Total	58	70.3051		

I physically over-exert myself.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	31.5906	18.38	.00
Within Groups	57	97.9687		
Total	58	129.5593		

I am at my recommended body weight.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	57.7655	27.8643	.00
Within Groups	57	118.1667		
Total	58	175.9322		

If I have any questions about my cardiac care or recovery, I ask the doctor or cardiac nurse.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	6.7364	7.5201	.01
Within Groups	57	51.0602		
Total	58	57.7966		

I have learned to manage stressful aspects of my life.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	9.3126	6.6065	.01
Within Groups	57	80.3484		
Total	58	89.6610		

She prepares heart healthy meals.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	22.2502	37.4279	.00
Within Groups	57	33.8854		
Total	58	56.1356		

She reminds me when I eat something I shouldn't.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	5.7628	13.1660	.00
Within Groups	57	24.9491		
Total	58	30.7119		

She praises me for following my diet.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	21.9632	13.6038	.00
Within Groups	51	82.3387		
Total	52	104.3019		

She reminds me to take my medications when I forget.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	13.3318	4.5737	.04
Within Groups	50	145.7451		
Total	51	159.0769		

She keeps the house quiet when I rest.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	8.4298	4.6452	.04
Within Groups	51	92.5513		
Total	52	100.99811		

She exercises with me or goes with me when I exercise.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	440.6155	14.6105	.00
Within Groups	55	152.8933		
Total	56	193.5088		

She does not plan activities that interfere with my heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	9.7788	9.2604	.00
Within Groups	56	59.1350		
Total	57	68.91138		

She encourages me to exercise regularly.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	19.1491	15.1092	.00
Within Groups	57	72.2407		
Total	58	91.3898		

She reminds me not to over-exert myself.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	13.1584	9.5583	.00
Within Groups	57	78.4687		
Total	58	91.6271		

She goes with me to my Doctor's appointments.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	16.7413	4.3063	.04
Within Groups	55	213.8201		
Total	56	230.5614		

She has dieted with me to lose weight as well.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	28.8000	7.9871	.01
Within Groups	46	165.8667		
Total	47	194.6667		

She encourages me to ask the doctor or cardiac nurse questions regarding my cardiac care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	12.3684	7.1979	.01
Within Groups	55	94.5087		
Total	56	106.8772		

She helps me see the bright side of things.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	6.3298	5.5914	.02
Within Groups	57	64.5185		
Total	58	70.8475		

She handles as many irritations as she can herself, to avoid upsetting me.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	5.5730	4.2143	.04
Within Groups	57	75.3762		
Total	58	80.9492		

My wife and I can openly discuss any aspect of my heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	5.8696	134493	.00
Within Groups	57	24.8762		
Total	58	30.7458		

I find it very helpful to discuss my health care with my wife.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	21.0143	26.0572	.00
Within Groups	57	54.9687		
Total	58	66.9831		

My wife shares her concerns about my heart attack with me.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	7.0151	7.3815	.01
Within Groups	57	54.1713		
Total	58	61.1864		

My wife and I agree on our interpretation of the Doctor's instructions for self-care following my heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.1978	10.3977	.00
Within Groups	57	55.9039		
Total	58	66.1017		

My wife encourages me to practice good self-care behaviors.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	7.3715	6.7601	.01
Within Groups	57	62.1539		
Total	58	69.5254		

My wife and I discuss how I can accomplish the self-care behaviors important for my recovery following my heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	28.5791	40.3181	.00
Within Groups	57	40.4039		
Total	58	68.9831		

My wife and I discuss everything relative to managing my recovery from my heart attack and maintaining my health.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	18.4958	23.6980	.00
Within Groups	57	44.4873		
Total	58	62.9831		

I express my appreciation for my wife's encouragement and help relative to my efforts to regain and maintain my health.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.1695	8.2809	.01
Within Groups	57	70.0000		
Total	58	80.1695		

My heart attack is a topic that my wife and I don't discuss.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	12.8390	6.3231	.01
Within Groups	57	115.7373		
Total	58	128.5763		

WIFE'S VARIABLES

Length of time living with patient.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	554.3757	4.4948	.04
Within Groups	57	7030.1667		
Total	58	7584.5424		

I feel angry that my husband did not care for himself, which may have contributed to the occurrence of his heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	22.0002	8.2427	.01
Within Groups	57	152.1354		
Total	58	174.1356		

I feel very angry about the changes that have occurred in my life as a result of my husband's heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	18.9172	6.7508	.01
Within Groups	57	159.7269		
Total	58	178.6441		

My husband uses his medications as directed.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	1.5152	6.3397	.01
Within Groups	53	12.6667		
Total	54	14.1818		

My husband rests as frequently as he should for good heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	46.0952	27.1050	.00
Within Groups	54	91.8333		
Total	55	137.9286		

My husband does exercise activities appropriate for his heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	90.2587	59.5557	.00
Within Groups	57	86.3854		
Total	58	176.6441		

My husband exercises as frequently as required for heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	101.0848	81.2109	.00
Within Groups	57	70.9491		
Total	58	172.0339		

He keeps medical appointments related to his heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	2.4168	4.3432	.04
Within Groups	57	31.7187		
Total	58	34.1356		

My husband follows a heart healthy diet.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	61.7221	65.1297	.00
Within Groups	56	53.0538		
Total	57	114.7759		

My husband physically over-exerts himself.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	43.6900	23.1004	.00
Within Groups	56	105.9135		
Total	57	149.6034		

My husband is at his recommended body weight.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	90.4018	37.3936	.00
Within Groups	55	132.9667		
Total	56	223.3684		

If my husband has any questions about his cardiac care or recovery, he asks the doctor or cardiac nurse.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	43.3094	23.1666	.01
Within Groups	56	104.6906		
Total	57	148.0000		

My husband has learned to manage the stressful aspects in his life.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	61.2502	39.2782	.00
Within Groups	57	88.8854		
Total	58	150.1356		

My husband is well informed about his heart condition.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	22.0417	16.3363	.00
Within Groups	57	76.9074		
Total	58	98.9492		

I have been supportive of my husband during his recovery.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	14.6641	11.9245	.00
Within Groups	57	70.0000		
Total	58	84.6441		

In spite of his heart attack, I expect that my husband will live his normal lifespan.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	32.6504	11.6339	.00
Within Groups	57	115.8750		
Total	58	139.5254		

I believe he will fully recover from his heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	26.3512	11.8932	.00
Within Groups	57	126.2928		
Total	58	152.6441		

I believe that my husband will not have another heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	20.9673	9.7003	.00
Within Groups	53	114.6500		
Total	54	135.5273		

I praise him for following his diet.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	8.5936	4.5936	.04
Within Groups	53	99.1519		
Total	54	107.7455		

I remind him to take his medications when he forgets.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	11.1730	5.776	.02
Within Groups	48	92.84470		
Total	49	104.0200		

I keep the house quiet when he rests during the day.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	11.7349	6.1338	.02
Within Groups	43	82.2651		
Total	44	94.0000		

I join him when he exercises.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	59.33407	28.7563	.00
Within Groups	50	103.1786		
Total	51	162.5192		

I go with him to his doctor's appointments.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	28.88940	7.6999	.01
Within Groups	50	187.6252		
Total	51	216.5192		

I praise him for keeping his weight under control.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.2952	4.4041	.04
Within Groups	45	105.1941		
Total	46	115.4894		

I diet with him in order to help him lose weight.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	17.7341	5.58224	.02
Within Groups	42	133.4250		
Total	43	151.1591		

I encourage him to ask the doctor or nurse any questions about his heart care.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	7.4673	5.3438	.02
Within Groups	53	74.0600		
Total	54	81.5273		

I don't smoke around him.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	22.1720	6.0494	.02
Within Groups	19	69.6375		
Total	20	91.8095		

My husband and I can openly discuss any aspect of his heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.4826	7.7555	.01
Within Groups	57	77.0428		
Total	58	87.5254		

I find it very helpful to be able to discuss my husband's health care with him.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	4.3889	5.9780	.02
Within Groups	57	41.8484		
Total	58	46.2373		

My husband shares his concerns about his heart attack with me.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.6193	5.2259	.02
Within Groups	56	113.7945		
Total	57	124.4138		

My husband and I agree on our interpretation of the Doctor's instructions for self-care following his heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	14.7119	11.8195	.00
Within Groups	57	70.9491		
Total	58	85.6610		

I encourage my husband to practice good self-care behaviors.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	4.3519	6.5476	.01
Within Groups	57	37.8854		
Total	58	42.2373		

My husband gets angry if I remind him about self-care behaviors.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	47.9239	15.9155	.00
Within Groups	57	171.6354		
Total	58	219.5593		

My husband and I discuss how he can accomplish the self-care behaviors important for his recovery following his heart attack.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	23.2763	15.6493	.00
Within Groups	56	83.2927		
Total	57	106.5690		

My husband and I discuss everything relative to managing his recovery from his heart attack and maintaining his health.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	35.5662	19.7767	.00
Within Groups	57	100.7097		
Total	58	136.2759		

My husband expresses appreciation for my encouragement and help relative to his efforts to regain and maintain his health.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	29.7753	15.1736	.00
Within Groups	57	111.8519		
Total	58	141.6271		

My husband's heart attack is a topic that we do not discuss.

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	10.3967	5.7806	.02
Within Groups	57	115.7373		
Total	58	128.5763		

SCALE VARIABLES

Patient's Internal Locus of Control

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	104.33165	5.5904	.02
Within Groups	57	1063.6157		
Total	58	1167.9322		

Patient's Marital Satisfaction

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	4363.4374	18.5596	.00
Within Groups	57	13400.9122		
Total	58	17764.3496		

Wife's Marital Satisfaction

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	2969.9772	5.2818	.03
Within Groups	57	32051.1136		
Total	58	35021.0908		

Patient's Health Related Communication

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	11588.3358	28.4617	.00
Within Groups	57	3180.9503		
Total	58	4769.2860		

Wife's Health Related Communication

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	2353.3928	22.4993	.00
Within Groups	57	5962.1033		
Total	58	8315.4961		

Patient's rating of Wife's Helpful Behaviors

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	3218.8342	16.8237	.00
Within Groups	57	10905.6913		
Total	58	14124.5254		

Wife's rating of Wife's Helpful Behaviors

SOURCE	D.F.	SUM OF SQUARES	F RATIO	F PROB.
Between Groups	1	1721.0319	8.1733	.01
Within Groups	57	12002.3579		
Total	58	13723.3898		

Appendix E
Regression Tables

Significant Predictors of Adherence with Patient's Scales

Measure	r	R	R2	Beta	F	p
Patient's marital Satisfaction	.32	.50	.25	.50	18.55963	.00
Patient's Internal Heart Disease Locus of Control	.23	.58	.33	.29	13.833784	.00

Significant Predictors of Adherence with Wife's Scales

Measure	r	R	R2	Beta	F	p
Wife's marital Satisfaction	.23	.29	.08	.29	5.28184	.03

Significant Predictors of Adherence Using Patient and Wife's Scales

Measure	r	R	R2	Beta	F	p
Patient's Health Related Communication	.48	.58	.33	.58	28.46166	.00
Wife's Health Related Communication	.45	.64	.41	.41	19.63640	.00
Patient's Rating of Wife's Helpful Behaviors	.49	.67	.45	.29	15.24866	.00